SAFETY MAINTENANCE & PRODUCTION

FORMERLY SAFETY ENGINEERING

AMERICA'S PIONEER MAGAZINE IN ITS FIELD

EST. 1921

SEPTEMBER, 1952
FIFTY CENTS

AO R9100 TYPE RESPIRATOR

The low cost of this BUREAU OF MINES APPROVED Respirator has always appealed in dusty operations where a soundly made respirator of simple construction is adequate.

The R9100 protects against *pneumoconiosis-producing* and *nuisance dusts* such as aluminum, borax, carbon, cement, charcoal, coke, flour, glass, grain, graphite, gypsum, limestone, pollen and wood. The companion respirator R9100T should be specified for protection against dusts that are not significantly more toxic than lead, such as barium, cadmium, lead arsenate, manganese and organic dusts—also for protection against DDT and insecticide sprays of similar potency. BUREAU OF MINES APPROVED numbers are BM 2137 and BM 2144 respectively. Your nearest AO Safety Products Representative can supply you.

QUICK FACTS

- Simply constructed of a smooth, rubber face mask and a corrugated permanent felt type filter, reinforced by wire frame.
- Easy to breathe in; non-reversing, low-resistant valve does not stick, is out of way. Easily replaceable.
- Lightweight (1½ oz.) for comfort. Soft rubber, smooth edges, self-adjusting double headband.
- Unobstructed vision—fits close to face, may be worn under helmet or with goggles.
- Easily cleaned — a shake, slap of the hand or light blast from air hose removes dust.

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COMPANY
SAFETY PRODUCTS DIVISION

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(For further details, use the Key Letters "AO" on Reader's Inquiry Card on page 77)

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★ LONG WEARING

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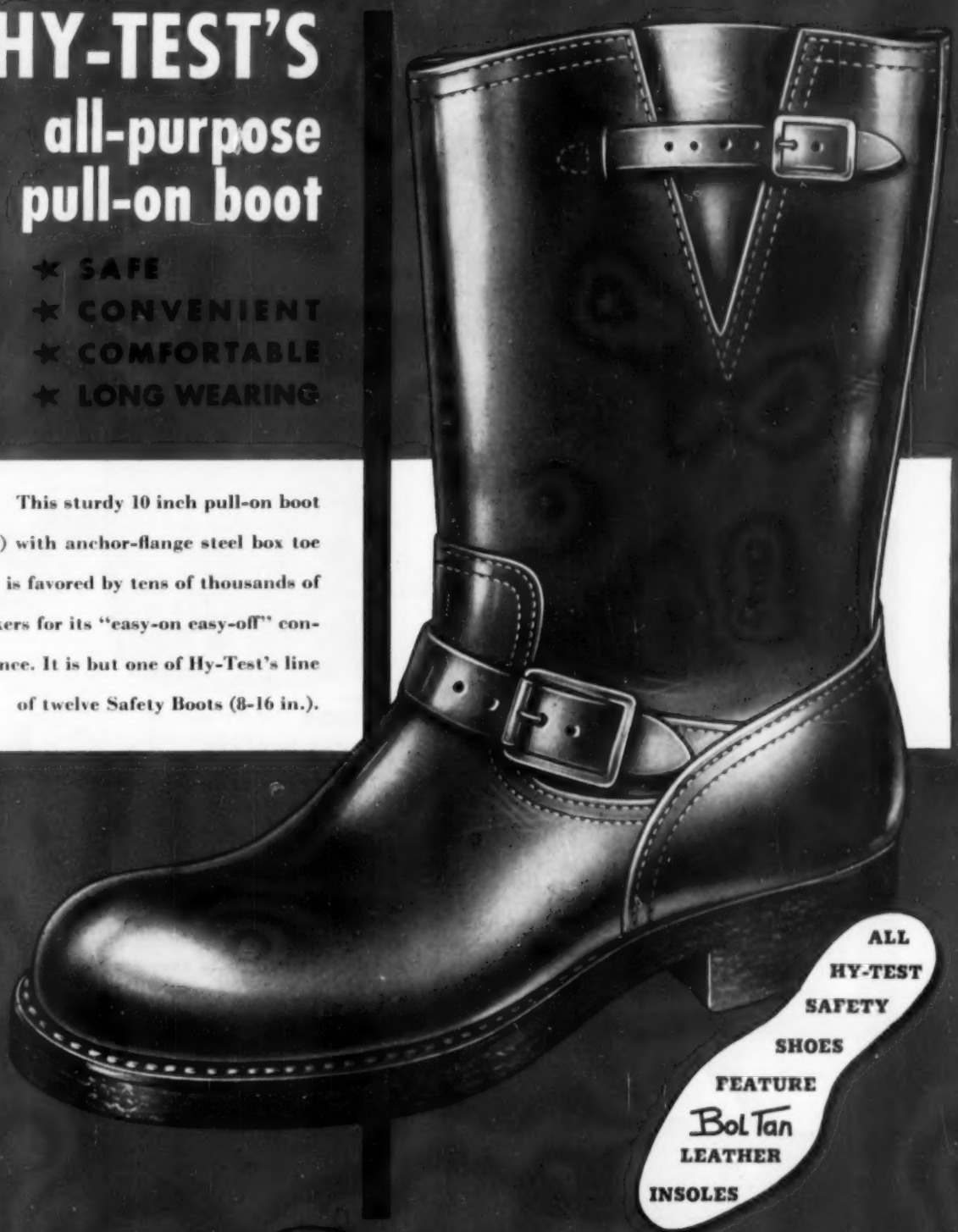

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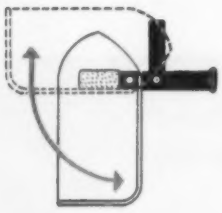

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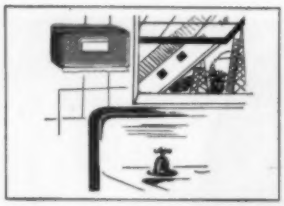
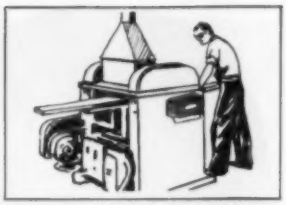


Mines like Anaconda use Magic wherever goggles get dirty and dangerous.

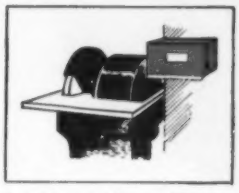


Mills like U. S. Steel use Magic wherever sparks fly or dirt and dust accumulates.

Refineries like Esso use Magic for welding and other maintenance jobs to overcome foul sight.

Manufacturers like American Can use Magic in production operations of every sort.

....THE BIGGEST SHEET THE BEST AND A BARGAIN



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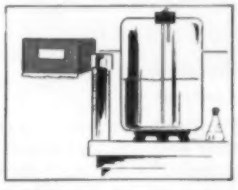

Laboratories like Hanford Atomic use Magic because its superb quality meets the highest scientific standards.

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Throughout American industry, what such users save in accidents, poor production, time and money you can save.

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MAGIC sheets are interfolded in sanitary Refill Packets. Each carton contains 6 Refill Packets (800 jumbo-size 5" x 6¾" super-strong sheets per Packet) at only $8.40 per carton. And the SELF-MOUNTING DISPENSERS cost only $2.50 each. All prices F.O.B. shipping point.

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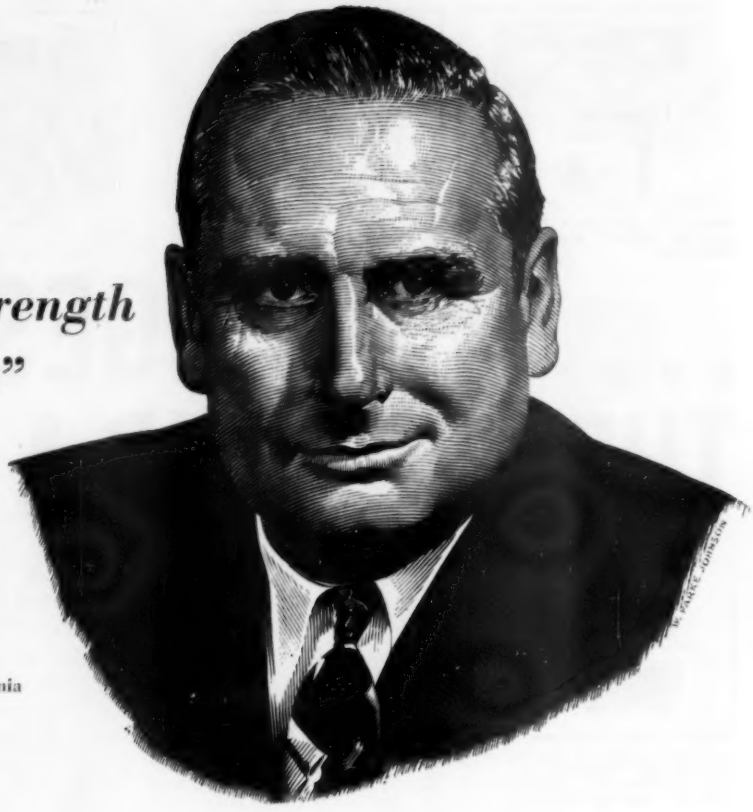

REESE H. TAYLOR
President, Union Oil Company of California

"Our country's strength is created by the responsibility and solidarity of individual citizens in a self-chosen government and economy. It can—and must—be perpetuated against all who seek to undermine it. The men and women who invest regularly in United States Defense Bonds are contributing to our national integrity and to the traditions of personal independence so characteristic of a free people."

Every pay day, 6,500,000 employed men and women . . . "are contributing to our national integrity and to the tradition of personal independence . . ." by the systematic purchase of United States Defense Bonds.

How important is this contribution to national economy and personal security? Let's look at a few figures.

- the cumulative purchases of 6,500,000 Payroll Savers add up to $130,000,000 per month.
- the number of individual E Bonds sold in 1951 totaled 68,069,000 pieces—8% more than in 1950.
- purchases of $25 and $50 E Bonds—the denominations popular with Payroll Savers—were greater than the sales of $500 and $1,000 E Bonds.
- monthly redemptions of unmatured E Bonds during each of 9 months (April to December, 1951) were less than 1% of the amounts outstanding.
- the *cash value* of Series E Bonds held by individuals on December 31, 1951, amounted to $34,727,000,000—$4.8 billions more than the cash value of Series E's outstanding in August, 1945.

That Americans have built personal security and a reservoir of purchasing power exceeding $34.7 billions is due in no small measure to the patriotism and foresight of men like Mr. Taylor and other leaders of industry who have made the Payroll Savings Plan available to their employees.

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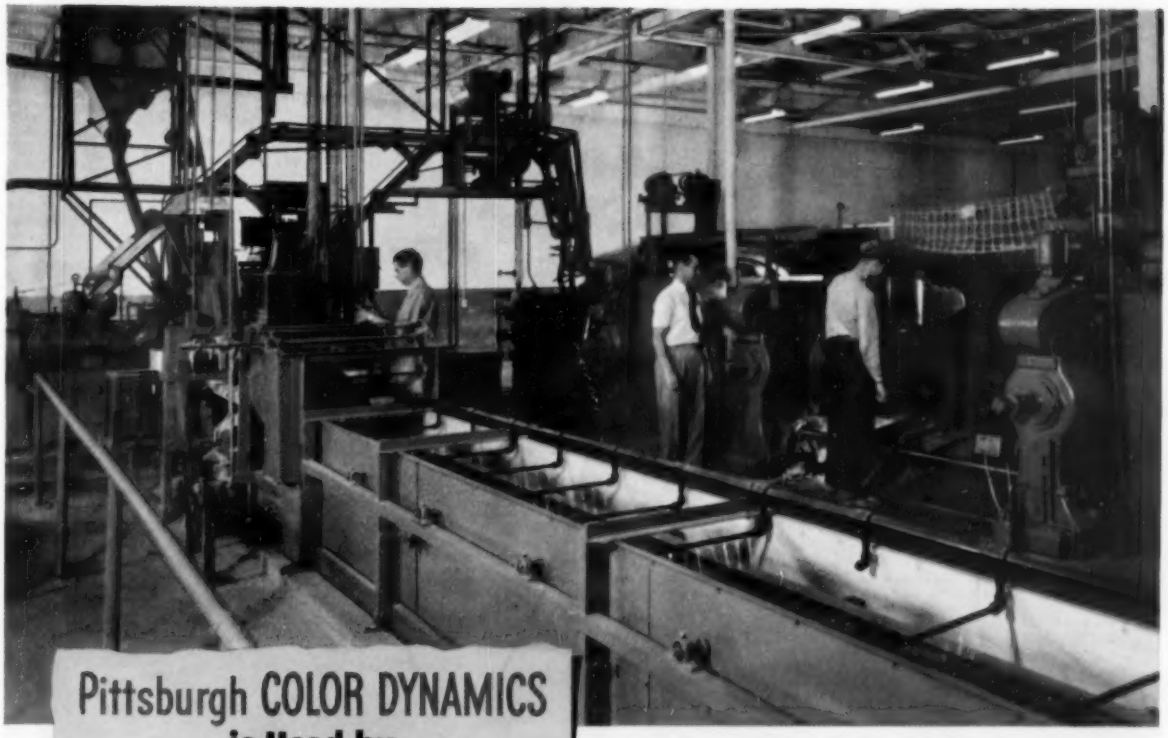

Pittsburgh COLOR DYNAMICS
is Used by GOODYEAR to Reduce Eye Fatigue

Color is put to work in world's most modern tire plant in Jackson, Michigan, to make working conditions more cheerful and pleasant

FAR-SIGHTED executives in many industries are now making Pittsburgh COLOR DYNAMICS an important part of their operations as they are becoming increasingly aware of the fact that eye fatigue often slows down production even more than physical fatigue.

● **When material** the operator is working on is too similar in color to that of his machine, his eyes grow weary, just as the muscles of an arm tire when they are kept tensed for long periods. Needless eye effort is required to differentiate between machine and materials.

● **Eye fatigue** often leads to headaches and other ailments. Absenteeism and accidents are likely to increase. Production efficiency and morale may be adversely affected. One objective of COLOR DYNAMICS is to reduce the causes of eye fatigue.

● **When you paint** the COLOR DYNAMICS way you use *eye-rest* colors for surfaces the operator sees when he glances up from his work. Their chief purpose is to give him a few moments of eye relaxation.

● **An excellent example** of eye-rest colors used according to the principles of COLOR DYNAMICS is the Jackson, Mich. plant of The Goodyear Tire and Rubber Company in which tires and tubes are manufactured for use as original equipment of new automobiles.

● **Here is the comment** of E. T. Ruffner, Plant Manager, on his experience with eye-rest colors: "Three years ago we painted our plant according to COLOR DYNAMICS. Our aim was to lessen eye fatigue among our workers. So completely satisfied are we with the results that we plan to repaint the same way in the near future."

● **COLOR DYNAMICS** has proved similarly successful in hundreds of other important industrial plants and commercial structures. It has earned this acceptance because it improves production efficiency.

● **Why not test** the practical value of this modern painting method in your plant? Use it on a machine or two, or in a completed department, and see the difference it makes in your output.

COLOR DYNAMICS Engineering Study of Your Plant—FREE!

● For a complete analysis of the service COLOR DYNAMICS can perform for you, send for our *free*, profusely illustrated booklet. It explains simply and clearly how to put color to work on machines, walls, floors, ceilings and mobile equipment. Better still, let us show you exactly how to apply it in your plant. We'll be glad to submit a color engineering study of your entire factory, or any part of it, without cost or obligation. Call your nearest Pittsburgh Plate Glass Company branch and arrange to have our COLOR DYNAMICS representative see you at your convenience. Or mail this coupon.

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☐ Please have your representative call for a Color Dynamics Survey without obligation on our part.

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PITTSBURGH PLATE GLASS COMPANY

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Besides giving far safer footing, floor waxes improved with "Ludox" have extra hardness. And along with these outstanding advantages, all the basic qualities of gloss, water-resistance, freeze-resistance, and leveling are maintained in properly formulated waxes.

Many safety and sanitation engineers now specify waxes made with "Ludox." And even if yours is the exceptional case, a wax made with "Ludox" should fit your needs. A variety of formulations is available for business, industry, and institutions.

Ask your wax supplier to show you his waxes containing anti-slip "Ludox." Or write for more information today. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., 4147-S Du Pont Bldg., Wilmington 98, Delaware.

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keeps you on the safe side

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Approved by U. S. Bureau of Mines for toxic smokes and gases, including carbon monoxide.

Chemical Cartridge Respirator No. 831

Protects against common industrial gases and vapors in low concentration. New molded rubber facepiece with flexible rolled edge for extra comfort. Bureau of Mines Approval No. 2302.

No. 880 for metal fumes, mists and dusts

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The Magazine of Safety

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EST. 1901

VOL. 104, NO. 3 SEPTEMBER, 1952

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1330 *Neoprene Crepe*

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It's Safe to Say

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★ SAFETY'S 40th NATIONAL CONGRESS

NORMALLY it isn't considered diplomatic to show forty candles on a birthday cake. In the case of the Sensitive Set, it can be downright unsafe to do so! Since a well-known and professionally penurious radio comedian has popularized thirty-nine as the maximum age acceptable in polite society, birthday cakes for individuals graying around the temples usually are limited to one or two candles at most.

A fortunate exception to this practice will be the birthday cake of the National Safety Congress this year which will be ablaze with the light of forty candles when the Convention opens its doors to approximately 12,000 delegates on October 20th in Chicago. The National Safety Congress has long since spilled over from one hotel to no less than five huge establishments necessary to take care of more than 200 sessions which will be addressed by 600 speakers. Every conceivable phase of safety will be covered, ranging from accident prevention in industry, on the farm, in the home, in the air to the sessions on traffic safety which will be held in Chicago's famous Congress Hotel.

Thousands of visitors from all parts of the United States, Canada, the Latin-American Republics as well as Europe will have an opportunity to see about 250 exhibits displaying all types of safety products, devices, appliances and equipment designed to prevent accidents and minimize injuries and to protect property against preventable losses.

Throughout the Congress, emphasis will be placed on the progress that has been made in accident reduction in the four decades that have followed the first meeting in Milwaukee in 1912. At that time a small group of far-sighted pioneers in the field of industrial safety organized the first annual convention on a nation-wide basis to further the advance of the safety movement. Incidentally the first Congress came twelve years after this publication was founded.

On more than one occasion this column has directed attention to the plethora of regional safety meetings. Many of them unfortunately are repetitious, duplications of effort and are nothing more or less than an attempt to obtain exhibitors to underwrite general expenses. The National Safety Congress and Exposition, however, is the world's first and foremost gathering place of specialists in accident prevention, fire control and industrial health conservation. As such it deserves most serious consideration as the Mecca for professional leaders as well as novices in their chosen field who in this Atomic and High-Production Age must be kept abreast of present and future trends as never before.

Here is one common meeting ground where representatives of management and labor, as well as the self-employed can bring problems of social betterment for quick, profitable solution by specialists and experts who, unlike the professional bleeding heart, go about their job of saving lives quietly and efficiently instead of hunting for headlines.

★ STRICTLY BETWEEN US

SAFETY directors, insurance company engineers and plant maintenance officials in various lines of industry are in a position to acquire information or knowledge that would be extremely helpful to an unfriendly power and its satellites. We are told that we are not actually at war but instead are engaged in a "police action" and for that reason there is a tendency to relax our efforts toward national security. Tragically enough the so-called police action has accounted for 110,000 casualties at this writing with the possibility that this toll will go much higher before the situation is brought under control.

It would be difficult to convince the next-of-kin that we are not at war or that we need take no steps to protect ourselves against vital information leaking to an enemy.

It would seem therefore that men in key positions who may be exposed to information classified as secret, top secret, top, top secret etc., should consider their duties in the light of all-out conflict and take adequate steps to guard against sabotage, fire, theft, damage or accident. This can be done if production processes and the various techniques are kept secret, together with production figures and all other information conceivably useful to prying eyes and ears with a pipeline leading to capitals behind the Iron Curtain.

Duly constituted authorities in Washington should be able to outline steps to guard against this leakage but in the last analysis it would seem largely a matter of common sense. Certainly, information concerning material for shipment to allied governments, movement of military aircraft, vessels etc., should not be discussed without proper clearance any more than during the dark days just before 1945. H.A.

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BAUSCH & LOMB

Safety Eyewear

by Watchful Dan The Safety Man

QUEER ACCIDENT, HAPPY ENDING

Clowning on the job is an easy way to set the stage for accidents. But here's a story of how tomfoolery probably saved a man's eyesight.

Seems a young maintenance department employee was sent on an errand to deliver a special wrench to a couple of other department regulars who were working on a scaffold in the plant boiler room.

As he entered the room, the kid spied a pair of safety goggles resting on the lid of a tool box belonging to one of the workers. He donned the goggles and began hopping around, mimicking one of the more notable shop characters not present.

A moment later there was a cry from above as a six inch bolt was jarred loose. At the sound, the kid looked up—just in time to catch the bolt right smack in the center of the left lens of the goggles he should not have been wearing. The lens was shattered, but his eye was uninjured. The doctor claimed the accident might have been fatal. The bolt had fallen 16 feet.

Needless to say, the young fellow was called in on the carpet for unauthorized use of another's goggles—but also he was the subject of more than a few congratulatory slaps on the back.

This fellow may remain a "clown" all his life—but he's quoted as saying he'll never discount the importance of safety goggles.

-Dan

(For further details, use the Reader's Inquiry Card on page 77)

CORK OF THE WALK

Armortred Soles and Heels

of course

Fourth of Five

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Red, Brown, Black

21–18–15–12–9 Iron

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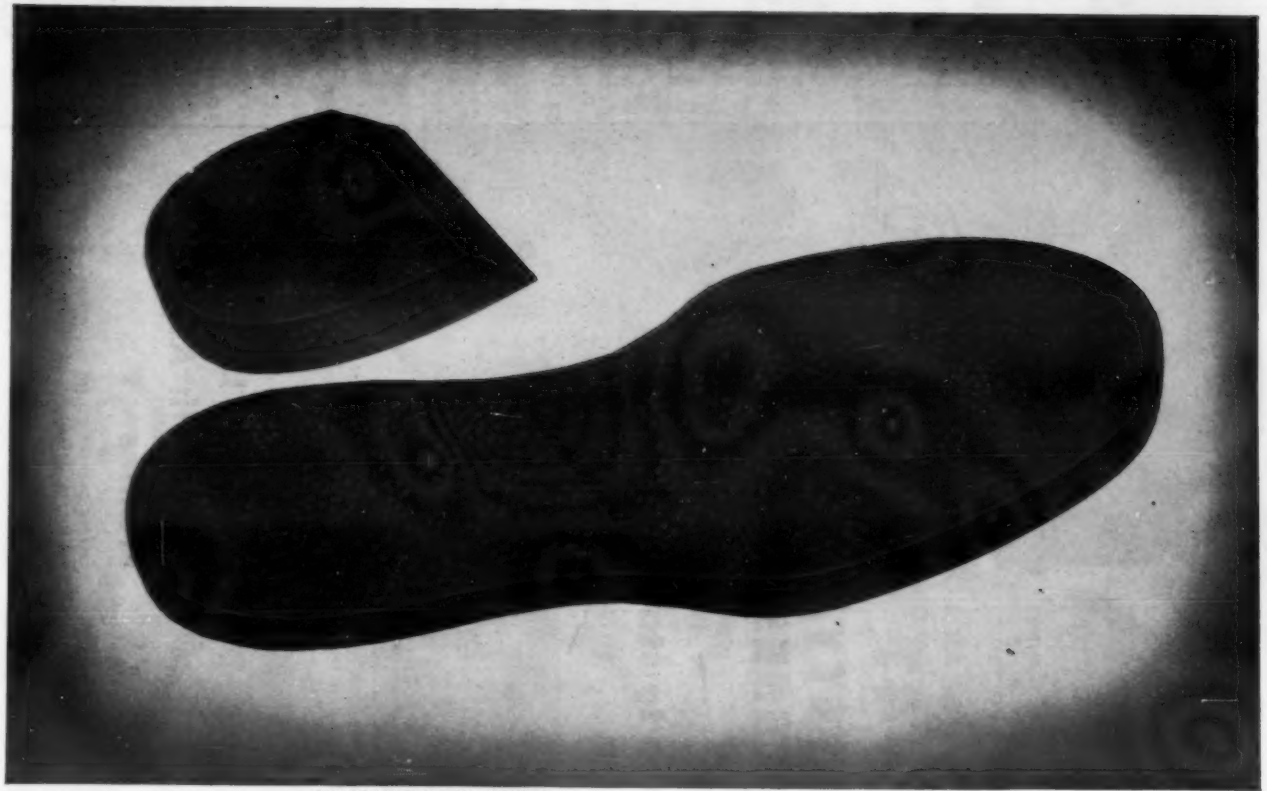

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(For further details, use the Reader's Inquiry Card on page 77)

SAFETY MAINTENANCE & PRODUCTION

VOL. 104, NO. 3 • SEPTEMBER, 1952

First aid room is attended by one of the company nurses, and the plant doctor calls daily. He examines employees and prescribes for them when necessary.

Paper Work is a Safety "Must"

If the paper work of your accident-report system snows you under, or, worse yet, if you have no system, take a look at the method used by Gustin-Bacon Mfg. Co. It's simple but thorough, and makes the safety program more effective.

Gustin-Bacon Manufacturing Co.

FIRST AID ROOM MEMO

(FOR EMPLOYERS USE

Date: March 1, 1952 Time: 2:20 P.M.

Name: William Washburn

Dept or Job: Dept. 13

Describe Injury and Cause:

Dust in left eye from blowing off machine.

REMARKS: This man should wear his goggles when doing this work.

When an accident occurs, it is reported on Form #R-4 (at left). The information is also transferred to the First Aid Control Sheet (Form #R-5 shown below) from which monthly and annual summaries can be made.

NEARLY every safety director—especially in a small or medium company—has found himself stymied on occasion because of a lack of adequate information concerning his department's functioning.

He needs this information not only for efficient departmental planning and performance, but also to answer sudden questions that top management has a habit of asking at odd moments.

How to have key information easily available without getting bogged down in excessive paper work is a problem that has long baffled many a safety director.

At Gustin-Bacon Manufacturing Co., of Kansas City, Mo. (producers of glass fiber insulation and pipe couplings), Safety Director M. C. Beaver has gone a long way toward solving some of the problems of excessive paper work, while maintaining quick access to needed information.

The development of streamlined paper work in Gustin-Bacon's Safety Department is a reflection of the generally progressive policies that govern the company. Founded in 1898 as a railway supply house, Gustin-Bacon, today, is the world's largest producer of low-density lightweight glass fiber insulation. It pioneered the development of this glass fiber insulation, and today, reflecting the company's steady growth, it operates a brand new modern plant (No. 7) in the Fairfax district of Kansas City which turns out two million pounds of the material a month.

The safety program at Gustin-Bacon is only three years old. In 1949, a fire in the stock preparation department caused $30,000 damage. It was not so much the amount of

Gustin-Bacon Manufacturing Co.

FIRST AID CONTROL SHEET

Year: March, 1952

DATE	TIME	NAME	DEPT	JOB	TYPE OF INJURY	DESCRIPTION OF ACCIDENT	DISPOSITION: TO WORK	TO DR	TO HOSP
1	10:00 A.M.	Walvey, John	15		Finger	Mashed Nail little finger R.H. on chain	X		
1	11:50 A.M.	Schaphenk, Lee	Crew Chief		Finger	Abrasion 3rd finger R.H. on bale material.	X		
1	2:20 P.M.	Washburn, William	13		Eye	Dust in left eye from blowing off machine.	X		
1	3:30 P.M.	Dale, Paul	12		Hand	Caught right hand between two Bbls.	X		
2	9:15 A.M.	Fairbanks, Roger	5-1	Oven-tender	Fingers	Small burns from crax to fingers of right hand.	X		
2	10:35 A.M.	Tongue, James	Line 3		Eye	Foreign material in left eye.	X		
2	3:30 P.M.	Taylor, T. J.	5-9		Hand	Bumped hand on overhead pipe.	X		
3	11:00 A.M.	Ripple, Martin	15		Thumb	Small cut from paper in left thumb.	X		
3	1:30 P.M.	Perry, Joe	5-7		Eye	Foreign material in right eye.	X		
3	2:00 P.M.	Rigio, Horace	13		Toe	Bumped toe on pipe guard.	X		
3	4:00 P.M.	Lash, Price	5-3		Hand	Splinters in right hand.	X		
4	8:30 A.M.	Jones, Ray	Storee	Clerk	Foot	Dropped package on right foot.	X		
4	1:30 P.M.	Adams, Paul	Storee	Clerk	Finger	Splinter in little finger of right hand.	X		
4	2:45 P.M.	Owens, John	Crew Chief		Thumb	Paper cut on right thumb.	X		

Inspection of a fog nozzle at one of fire equipment stations in the warehouses. Behind the helmet of the fire chief is a fire alarm box. Instead of installing fire extinguishers singly on posts where they become partly obstructed, Gustin-Bacon uses plainly marked "Fire Stations," which include first aid kits, in warehouses.

GUSTIN-BACON MANUFACTURING COMPANY

FIRE REPORT

Date March 15, 1950

Time Fire Started A.M. / P.M. 3:50 — Time Fire Out A.M. / P.M. 4:10

Location Line 5-5 Oven Stack.

Material Burning Residue in Stack.

Cause of Fire Residue build-up in Stack.

Estimated Damage None

Shut Down Time Due to Fire 20 minutes.

Give Number of Pieces Equipment Used

Dugan Hand Extinguishers Two — ½" Water Hose Lines One

Water Pump Can Extinguishers — 1½" Fire Hose Lines

Dugan Wheeled Extinguishers — Gas Masks

Remarks and Recommendations

If these Stacks were cleaned more frequently, preventing this residue build-up, these Stack fires could be prevented.

Sup. Roy Allen

Each fire is reported on a Fire Report Form, shown above. From these records, a fire summary report is compiled each month.

loss that bothered Gustin-Bacon's management as it was the fact that the loss could have been prevented by the most elementary fire training. The watchman who discovered the blaze became rattled and let the fire get away from him. The company lost some production and some customers, and so decided the time had come to institute a full-fledged safety program.

Appointing M. C. Beaver as Safety Director (he had formerly been a sales engineer for Ansul dry chemical fire extinguishers), the company moved into a program of safety activity that would be the envy of companies many times its size.

Accident Record System

To keep track of the safety education and performance of Gustin-Bacon's 900 employees in seven plants, Beaver devised a record system that is simple to maintain, yet enables him to determine at any moment what the overall picture is.

Take the first aid and injury records, for example. These are maintained by the company nurse in the first aid room of each plant. Each time an employee requires first aid, a form (R-4) is filled out, listing the time of the accident and describing the injury and its causes. Space is also provided for a recommendation that will prevent recurrence of the accident.

In the case of William Mashburn, of Dept. 13, who had dust from a machine blown into his left eye, the recommendation was that the employee should wear goggles when doing that type of work.

After a record is made of the case on R-4, it is then transferred to the First Aid Control Sheet (form R-5). This gives the Safety Director a birds-eye view of the entire first aid picture. R-5 lists the date and time of each employee's accident, his name, department, job, type of injury, description of accident, and disposition of the case; that is, whether he goes back to work, to the doctor, or to the hospital. Thus, at the end of the month, the Safety Director has the information that enables him to complete his monthly and annual accident summary.

The accident summary shows the complete company picture. It lists the total number of lost time injuries, first aid room calls, and accident frequency. Thus, it clearly indicates whether there has been an improvement or a regression in employees calling for first aid attention on minor injuries. An up-to-date copy of this report is sent monthly to all plant executives.

Fires are an important hazard in the Fairfax plant because of high oven temperatures required to manufacture glass fiber insulation material. Most fires are of a minor nature, but all are reported to the Safety Director on a Fire Report Form (M-240). This form provides information on the location of the fire, what time it started and when it was put out, the material that burned, the cause of the fire, the estimated damages, shut down time, equipment used to put it out, and the recommended procedure to avoid similar fires in the future.

On the first day of each month, a general summary of all fires is made by the Safety Director to the company management on Form R-3.

This affords a basis for comparing the progress being made on the company's fire prevention program. In recent months, the number of small fires in the ovens has been cut in half.

Another first-of-the-month procedure is a complete inspection of all plant protection equipment by the plant fire brigade chief. He then fills out a two-page inspection form (R-1 for sprinkler equipment and R-2 for hand extinguishers), which is sent to the Safety Director. This report covers inspection of all fire fighting equipment to *(To page 61)*

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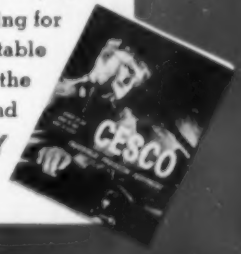

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(For further details, use the Reader's Inquiry Card on page 77)

Double fire protection: carbon dioxide fire extinguishing discharge nozzles at upper edge of side walls as well as water sprinkler fire extinguishing heads at ceiling of paint spray booth.

TOMORROW'S

FEATURE

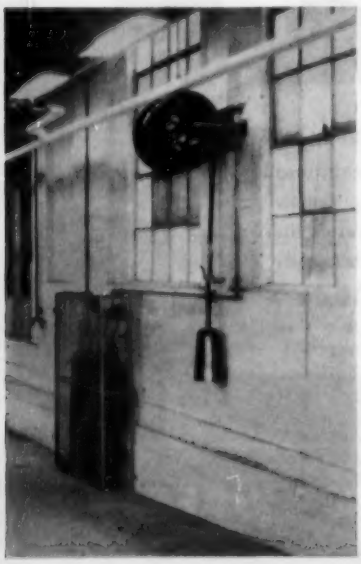
This is the first of four feature articles concerned with Fire Protection. The next three articles of the series will be published in the October, November and December issues of SAFETY MAINTENANCE & PRODUCTION.

Built-in fire extinguishing systems have progressed rapidly during the last few years and the present trend indicates that such systems will be the fire protection of the future.

By PATRICIA C. HENSLER
Fire Protection Institute
New York City

SPLIT-second control of fire will be possible on the new superliner United States. A specially-designed automatic smoke and heat fire detecting system combined with a network of piping that can carry carbon dioxide gas to every vital area provides the superliner with the most modern fire protection system on any ship.

With the current trend toward system installations many fire experts are recommending similar built-in protection for factories, stores, warehouses and other locations of high fire hazard where far more substantial quantities of an extinguishing agent would be needed if fire strikes.



High pressure carbon dioxide hose reel fire extinguishing system for local application in vehicle paint stripping area.

Leading manufacturers of fire protection equipment concede that it is difficult to estimate the dollar volume ratio of system installations to installations of portable equipment. However, portable equipment, in the majority of cases, is supplied along with system installations, as fire usually begins in a small way and grows rapidly. Sometimes, so-called first aid fire fighting with portable equipment will do the job if the fire is spotted soon enough.

The built-in fire protection system attained its greatest initial thrust aboard American cargo vessels many years ago. Ten years ago the built-in system in industry was a specialty. Today it is proving to be the answer for such fire problems as electric power installations, flammable liquid operations, and storage warehouses having valuable contents.

With new designs being tested practically monthly, and with more and more property owners turning to the fire protection engineers with new and challenging risks, it can safely be anticipated that today's systems are only the forerunners of even more ingenious automatic fire-quenching mechanisms in the future.

Such golden publicity events as the launching of the "United States," with the attendant news stories describing the fire safety of the ship, are also expected to be factors in promoting system installations. Ironically, due to Government-imposed security restrictions, the full story of what might be termed the fabulously complete extinguishing system on the great new liner cannot be told in any except the most general terms.

Chemical extinguishing systems deserve an important place in management fire safety thinking. While they involve substantial outlays for installation, they can more than "pay for themselves" in terms of reduced insurance costs, prompt control of incipient fires and peace of mind.

For example, the Brooklyn plant of a large metropolitan newspaper had a fire early this year in a press which was not protected with any

FIRE PROTECTION . . . .

THE BUILT-IN SYSTEM

kind of system. This was a brand new press. The result of the fire was the total loss of a half-million dollar press, which even if covered by insurance, cannot be replaced within a reasonable time because of material shortages.

Along similar lines, a plant in Ohio making stained shingles has an oven to dry the naphtha from the stain which is applied to the shingles. Before they installed a system, they experienced a fire in the oven resulting in a loss estimated at $5,500 and a loss of 65 production hours. After the installation of a system, they experienced another fire with no material loss and one hour of production time lost.

There are a number of types of automatic fire extinguishing devices which go into action when the heat in a given location reaches a predetermined level. These systems may employ water, carbon dioxide, foam, vaporizing liquid or dry chemical. Each system has particular advantages which should be analyzed carefully with regard to the risk involved.

Types of Systems

The oldest automatic system uses water and is commonly referred to as a "sprinkler" system. It consists of a network of pipes with water outlets at locations where fire is likely to occur. These outlets are kept closed by fuse devices which melt when the heat level reaches 160 degrees F.

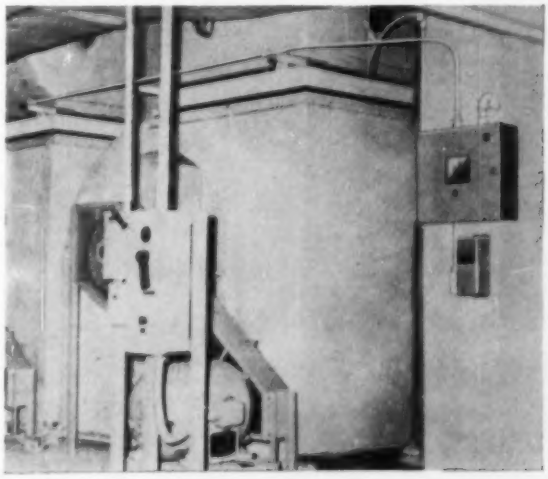
A distinct factor in systems of this type is the property owner's complete dependence on an adequate supply of water, together with adequate pressure. This factor does not, of course, apply to systems employing carbon dioxide or vaporizing liquid and is a relatively minor factor in foam systems.

It should be noted, too, that in some cases, water damage from sprinklers has exceeded the damage caused by the fire involved. Systems employing carbon dioxide or vaporizing liquid as the extinguishing agent are not subject to this hazard and foam systems are generally used on special types of risks, such as gasoline or oil installations.

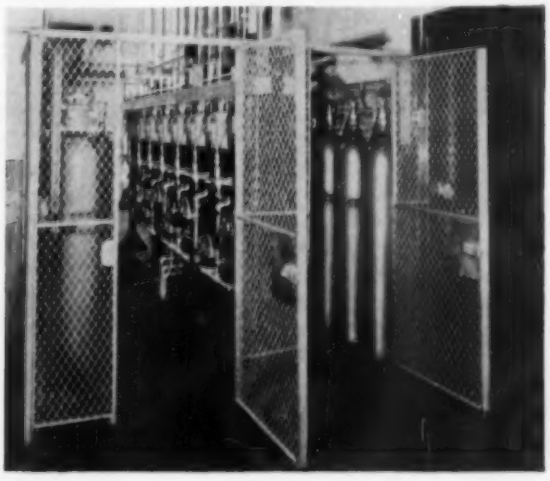
Fire protection systems using either chemical or mechanical foam are based on the principle of applying a smothering coating to burning surfaces, using either fixed or portable equipment. Foam also has some cooling effect.

Chemical foam is formed by a chemical reaction and consists of a mass of tiny long-lasting bubbles of carbon dioxide gas which are not easily broken down by agitation or heat.

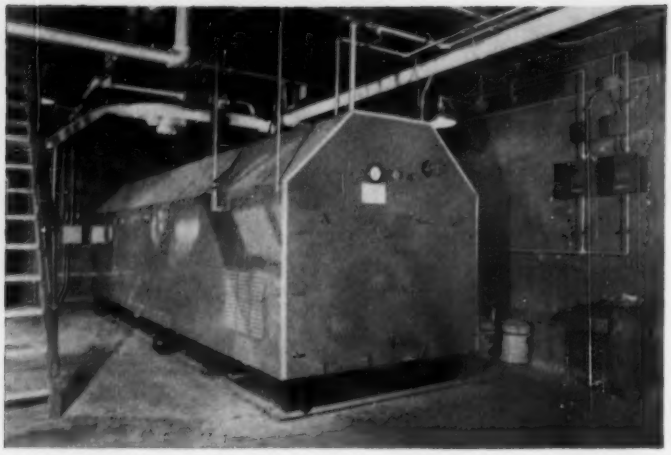
Mechanical or "air" foam is generated by mechanical action whereby air is mixed into a solution of water



Typical one or two space smoke detector of automatic smoke-fire detecting system guarding air conditioning system to prevent spreading smoke, smoldering or fire throughout entire building.



Typical installation of carbon dioxide cylinders and controls of a high pressure carbon dioxide fire protection system for enclosed or semi-enclosed spaces.



Typical installation of a carbon dioxide storage tank for a low pressure carbon dioxide fire extinguishing system.

and foam liquid compound to form a continuous mass of air bubbles resembling whipped cream in outward appearance.

Carbon dioxide fire extinguishing systems reduce the oxygen content of the air to a point where it will no longer support combustion, and range from simple one-cylinder installations to complex batteries of cylinders which discharge the gas by various methods. They include total flooding of the protected enclosure to dilute the atmosphere to a point where fire cannot continue; applying the gas locally at the surface protected (as in the protection of flammable liquids in open tanks); prolonged discharge (primarily applicable where glowing and smoldering material necessitates maintaining an atmosphere of carbon dioxide for a considerable period.)

Carbon tetrachloride, well known as an extinguishing agent in vaporizing liquid extinguishers, has been used in permanent piped or unit systems to a limited extent. Experiments indicate that the efficiency of this type system depends on the type of fire to be extinguished, the volume and ventilation of the space to be protected, point of application and pressure maintained. Where such systems have operated, enclosed spaces must be ventilated to clear the air of fire gases. Its toxity is an adverse factor where carbon tetrachloride is released automatically where people are congregated, particularly where persons may be sleeping.

Unusually sensitive fire protection systems are being used to advantage in crowded locations where there is danger of panic. In smoke detecting tests staged for safety engineers, the units installed in one of the nation's largest department stores, recorded the presence of smoke from 300 to 500 feet away and sounded an audible alarm within less than 100 seconds in every case.

Advantages of Systems

One of the great advantages of chemical extinguishing systems is that they can be "tailor-made" to fit the fire hazards of even the most complex industrial or commercial operation. A second advantage is the freedom from worry about the man-power factor in fire-fighting—including the basic worry as to whether the manpower will be on the premises at all in the event of an emergency. Too many factories and warehouses have been lost through inadequately-trained night-watchmen, for example.

A third advantage lies in the fact that a system is probably the most effective protection available for costly machinery. With the cost of basic tools spiralling since the war, the loss of a single press or loom, for example, can mean the difference between profit and loss over a considerable period of time.

Factors of Selection

Naturally, a system installation is not a project to be approached lightly or casually. It is a basic engineering assignment requiring the best talents of management, plant superintendents, plant fire safety officials and the manufacturers of fire protection equipment. In many situations, the cooperation of municipal building and fire department authorities can be most useful.

The best system *(To page 60)*

Typical installation of large banks of carbon dioxide cylinders for high pressure carbon dioxide fire protection system.

SAFETY WITH FRENCH DRESSING

The new French Liner "S. S. FLANDRE"

UNCLE Sam gallantly doffed his hat to welcome a new emissary of safety when the French Liner, S. S. "Flandre" entered the port of New York to take her place as another important link between the United States and the European continent.

Not quite large enough to be called queen, the new princess of the Atlantic has been dressed by artisans of France who have combined safety with traditionally French style. Glass and metal for decorative features provide resistance against fire.

Built both for transatlantic service and warm weather cruises, the 20,000-ton "Flandre" will cater to that important segment of steamship clientele that finds the atmosphere of a relatively small ship particularly congenial. Charm and informality will be found on the new vessel with the comfort and gayety expected in a French Liner.

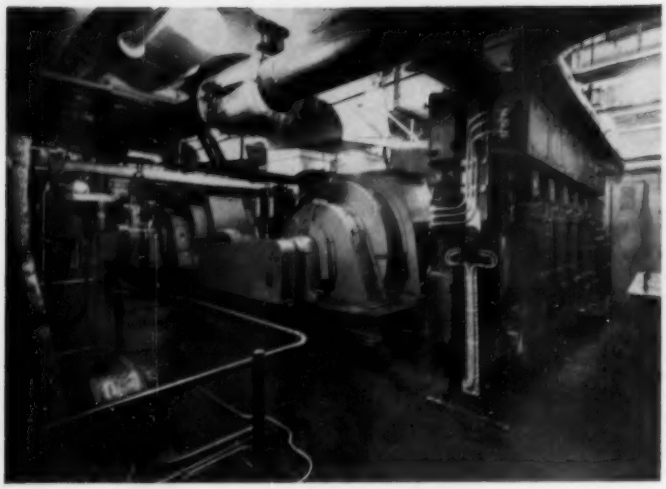
Technical specifications are the result of a four-year study by French naval architects. For safety the "Flandre" will greatly exceed the requirements set by the London Convention of 1929 and will conform with the recommendations of the 1948 Convention.

The vessel has an eye-catching design as if a Paris boulevardier set his hat at a rakish angle. With bulbous hull below the water line and a cruiser stern, the ship presents an appearance of a king-sized yacht.

The Safety Accent

The hull, which is almost completely welded, is divided into eleven

Radar equipment gives the Flandre eyes at night and in bad weather.



View of the new liner's engine room.

water-tight compartments with ten water bulkheads extending up to Deck A in the stern and center and up to the Main Deck in the bow. With a double bottom extending over the entire length of the ship, it can remain afloat with two compartments flooded.

Watertight bulkheads extend to the upper decks and act as fire walls, dividing the ship into six separate and autonomous divisions insofar as fire protection, electric power and ventilation are concerned.

Protection a la Carte

The roofs and decks above the upper promenade deck and also the various accessories including the life boats all are of light aluminum alloy and constructed as a safeguard against fire.

Furnishings and fabrics are made of fire-resistant materials as are wall decorations in all the public salons.

Anti-slip walkway surfaces have been provided on all stairs and floors to protect passengers and crew against slipping accidents and falls.

The most modern fire-smothering and extinguishing systems have been installed throughout, and the smoke detecting and alarm devices are centered in the Security Headquarters to warn ship's officers of any imminent danger before the possibility of passenger alarm or panic.

The bridge is equipped with all the most modern aids to navigation, including magnetic compass, gyro-compass, Radar, Loran Naviphone, sounders, etc.

Making the crossing in just under six days, the "Flandre" is the largest and fastest passenger vessel to be built in French shipyards since the liberation of France.

Representing an investment of more than twenty million dollars, the newest seagoing princess of France, as well as her bigger sisters, the "Liberté" and "Ile de France" will pay frequent tribute to our Statue of Liberty who, while born in France, has become America's Permanent First Lady. H.A.

Pictures by courtesy of the French Line.

Penny Still Valuable

THE lowly penny is being used in the steel industry to teach a lesson that should save thousands of dollars, according to *Steelways*, publication of The American Iron and Steel Institute.

Rushed employees faced with burned out fuses sometimes slip pennies into the fuse box to save time and thus ignore the danger of fire from overloaded electrical circuits, the magazine says.

To put across the danger of this sort of penny-wise fire-foolishness, one steel company has rigged up a special fuse box into which it invites workers to place a penny or a fuse of too high a value. The response is immediate. A wire on the front of the box goes up in flames. . . .

By such simple stratagems the steel industry has earned a place as fifth safest for accident frequency among some 40 American industries.

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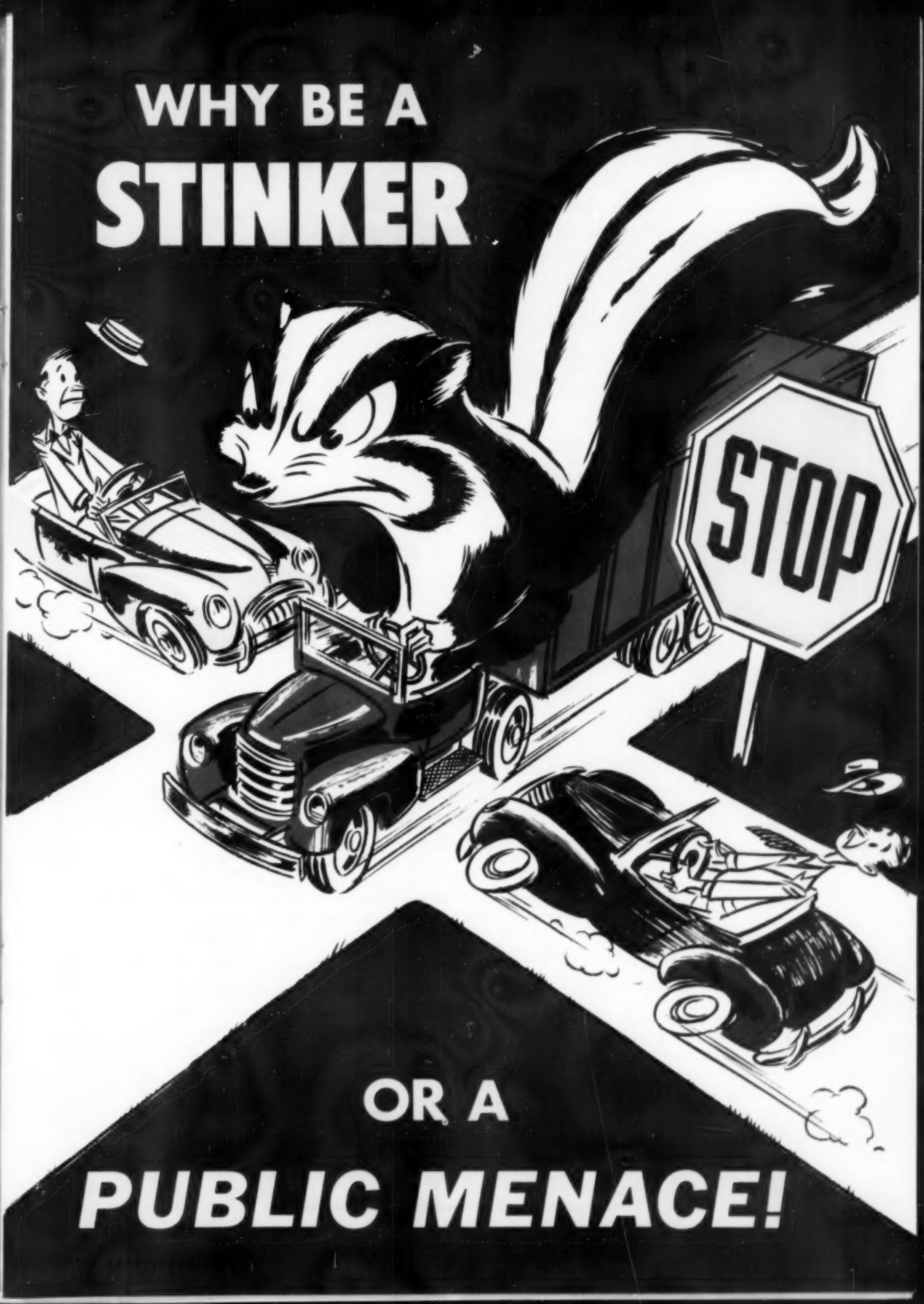
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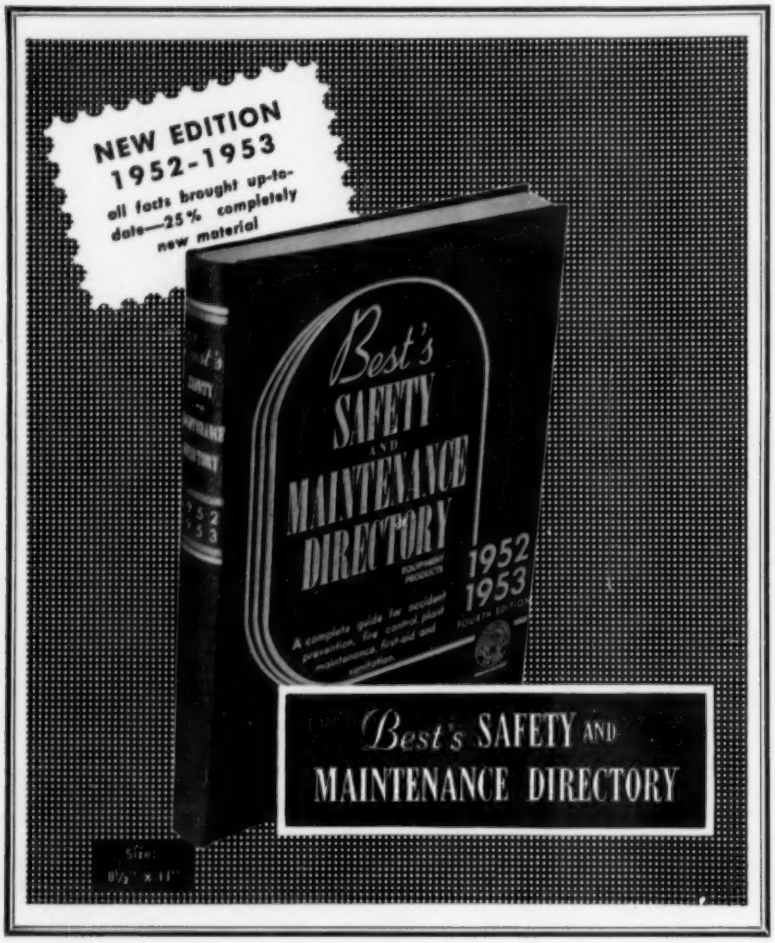

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IS THERE A COMMON DENOMINATOR

FOR ACCIDENT-PRONES?

Do accident repeaters have other traits in common? To try to find the answer, the Columbia-Southern Chemical Corp. made a statistical analysis of the pre-employment tests of accident-prone workers as compared with accident-free employees.

By MARY TYDLASKA, Personnel Department
Columbia-Southern Chemical Corp.
Lake Charles, Louisiana

THE frequently reported finding that a few individuals in a given group account for a disproportionately large number of accidents has led to the now respectable hypothesis that such individuals may be "accident-prone."

The following study was an exploratory attempt to determine empirically if pre-employment tests could measure differences between a group of industrial accident repeaters and a group of industrial workers who were accident-free.

The personnel department of the Columbia-Southern Chemical Corporation of Lake Charles, Louisiana, has used a battery of pre-employment tests in appraising applicants for employment, since the opening of the plant in October, 1947. The following test scores were available on all hourly employees:

1. The Otis Test of Mental Ability (Form 2A & 2B)

The Otis Test of Mental Ability consists of 75 problems and is administered under a time limit of 30 minutes. It is a test of general mental ability and the number of correct answers can be interpretated in terms of an I.Q. or the probable grade completed.

2. The Kuder Preference Record

The Kuder Preference Record is designed to measure an individual's expressed interest in the following general areas: (1) Mechanical, (2) Computational, (3) Scientific, (4) Persuasive, (5) Artistic, (6) Literary, (7) Musical, (8) Social Service, (9) Clerical. The test consists of 168 groups of three suggested activities. The person taking the test indicates the activity he likes most and the activity he likes least in each group. There is no time limit for this test. Percentile scores are obtained which indicate the areas of vocational interest and their relative strengths from the individual's expressed vocational choices.

3. The Minnesota Multiphasic Personality Inventory

The Minnesota Personality Inventory is an instrument designed to provide in a single test, scores on all

the more important phases of personality. The instrument itself comprises 550 statements, each printed in simple language on a separate card, covering a wide range of subject matter from the physical condition to the morale and the social attitude of the individual being tested. The subject is asked to sort all the cards into three categories, indicated by guide cards, 'TRUE,' 'FALSE,' and 'CANNOT SAY.' The number of cards thus sorted are tabulated on a simplified record sheet to provide a basic record to be scored by any one of the basic keys. Nine abnormal personality types are used in the Personality Inventory and are designated by abbreviations.

4. The Purdue Pegboard Test

The Purdue Pegboard is a test of finger dexterity. The score sheet states, "High scores on the Pegboard have been shown related to success in the majority of occupations requiring motor coordination." The test consists of four parts, insertion of pegs with the right hand, the left hand, both hands simultaneously, and finally, a simple assembly involving placement of a washer and a collar over the peg. The first three parts require a half minute each and the last part one minute, the scores on all parts being based on the number of operations completed in the time allotted.[2]

The selection of two groups to be studied consisted first of reviewing all reports of visits to first aid. Only white men who had been employed at the plant for at least thirty-six months were considered in this study.

One list was compiled of names of employees who had made at least thirteen trips to first aid. For the accident-free group, an attempt was made to select only those individuals who had visited first-aid for as few as three times but there proved to be few cases, so a list of workers who had less than six visits to first aid in three years time was drawn up. The nurses reviewed the lists independently and approved them as being representative of their "most" and "least" customers.

[2] Oscar K. Buros, THE THIRD MENTAL MEASUREMENT YEARBOOK. Rutgers University Press, New Brunswick, N. J., 1949.

ANALYSIS OF TEST RESULTS

TESTS	ACCI-DENT-FREE Group	ACCI-DENT-PRONE Group	Difference of Means	Standard Deviation	't' ratio *	Level of Significance **
OTIS TEST OF MENTAL ABILITY—Raw Scores	43	43.03	.03	—	—	—
KUDER PREFERENCE RECORD						
Raw Scores						
Mechanical	100	91	9	3.931	2.289	.5%
Computational	35	39	4	—	—	—
Scientific	71	72	1	—	—	—
Persuasive	67	64	3	—	—	—
Artistic	49	51	2	—	—	—
Literary	41	40.5	.5	—	—	—
Musical	14	14.6	.4	—	—	—
Social Service	70	76	6	3.250	1.846	—
Clerical	51	50	1	—	—	—
MINNESOTA MULTIPHASIC PERSONALITY INVENTORY						
Percentile Scores						
H_s	43	43.15	.85	—	—	—
D	48	50.85	2.85	—	—	—
H_y	50	54.04	4.04	2.307	1.733	—
Pd	49.5	49.74	.24	—	—	—
Mf	46	48.15	2.15	—	—	—
Pa	47	46.56	.44	—	—	—
Pt	43	42.37	.63	—	—	—
Sc	43	42.52	.48	—	—	—
Ma	50.5	49.22	.28	—	—	—
PURDUE PEGBOARD						
Percentile Scores	78.7	85.7	7	—	—	—

* Used in determining the reliability of the difference between two means. The 't' ratio determines the significance of the obtained difference.
** The per cent of times it would be possible for the obtained difference between two means to occur by chance alone.

The Hazard Factor

The next step was to pair or to match these two groups on pertinent variables. The attrition was rather high. Two groups of men, twenty-nine in the accident-prone group and twenty-six men in the accident-free group, were finally selected and matched individually as to specific job and length of service. Matching on job was in a real sense tantamount to matching on job hazard. The mean amount of experience on the job was 46.23 months for the accident group and 49 months for the non-accident group. This difference is not significant.

In the accident-prone group the number of individual visits to first aid varied from thirteen to thirty-four with twenty as the mean number of trips per man. In the accident-free group the number of individual trips to first aid varied from one to six with 3.1 as the mean number of trips per man.

A tentative hypothesis was held that the accident-prone group would prove to have a statistically significant higher score on the Hypochondriasis scale of the Minnesota Personality Inventory than the accident-free group. This scale is a measure of amount of abnormal concern about bodily functions, and it seemed reasonable to assume that a group of men who lead the plant in their visits to first aid might be influenced by personality patterns of hyperchondria.

Results of Tests

A statistical analysis of the test results of these two groups of employees was undertaken and in general proved to be fruitless. No significant differences were found to exist between the scores of the accident-prone group and the accident-free group on the Otis Test of Mental Ability. No significant differences were found to exist between the scores of the accident-prone group and the accident-free group on the Purdue *(To page 38)*

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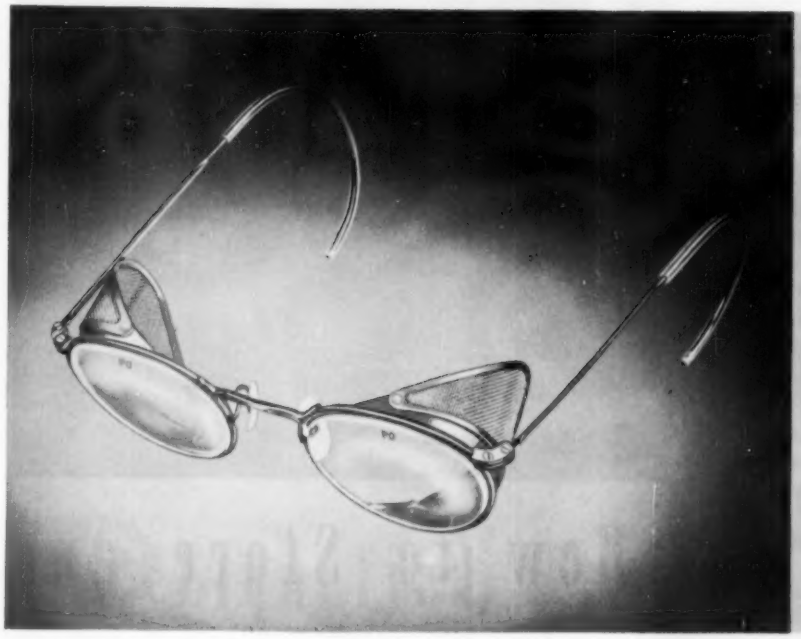

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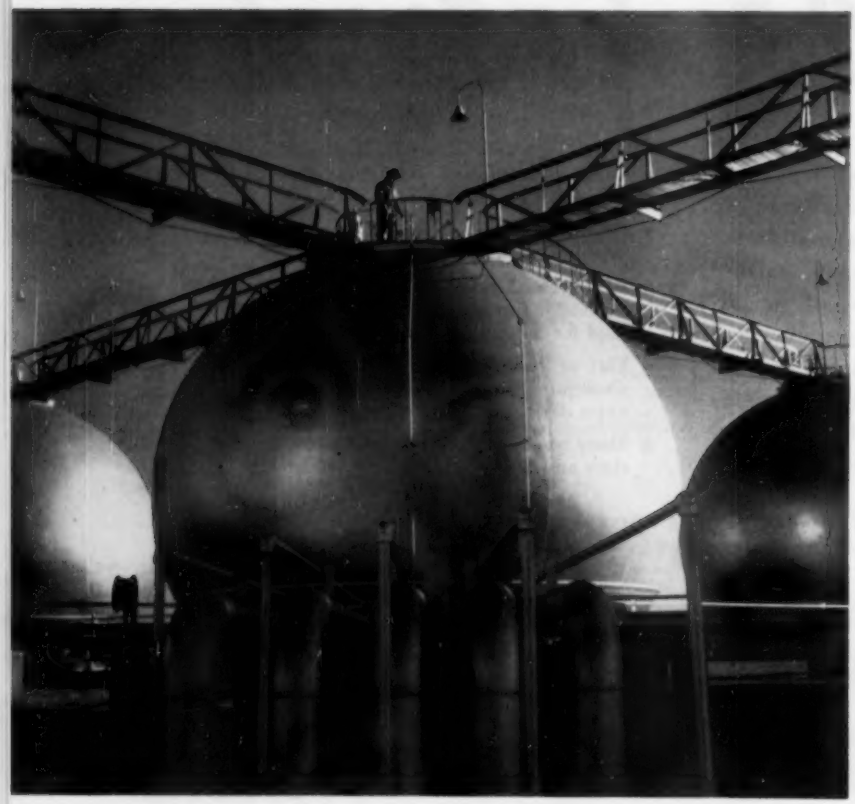
Gas cycling plant in Texas for producing liquefied petroleum gas.

How to Store and

If liquefied petroleum gases are to be transported and used with the utmost safety, sound engineering principles must be incorporated in the storage and handling equipment.

THE use of liquefied petroleum gas has increased in twenty-five years from slightly over a million gallons per year to over four billion gallons per year. This phenomenal growth is a result to a large extent of its acceptance as a substitute for utility gas for those who are located beyond the gas main. At the end of 1951, it is estimated that there were 31,412,000 residential gas customers of which 8,000,000 were using LPG from containers, 295,000 were using LPG distributed through mains, 4,364,000 were using manufactured gas, 15,760,000 were using natural gas, and 2,993,000 were using mixtures of manufactured and natural gas. This indicates that at the end of 1951 there were more customers using liquefied petroleum gas than there were customers using manufactured gas and a mixture of manufactured and other gases. In fact, one out of every four gas consumers at the end of 1951 was using undiluted liquefied petroleum gas or mixtures of liquefied petroleum gas and air.



In addition to the large number of people utilizing liquefied petroleum gas as such, practically every major gas utility and a large number of smaller utilities are using liquefied petroleum gas for one or more of the following purposes: "peak shaving," emergency standby, heating coke ovens, water gas carburetion, water gas fuel, or fuel for a reforming plant.

What Is Liquefied Petroleum Gas?

The name liquefied petroleum gas or gases is abbreviated to LPG, LP-Gas, butane, propane, bottled gas, and various trade names. Actually, liquefied petroleum gas is a generic term used to designate any one of or a mixture of the following hydro-

LEFT—
Storage tanks for liquefied petroleum gas.

Cylinders in a bulk plant are ready for shipment to dealers. Bell protectors are used over the valve caps during transit.

In a domestic trade bulk plant, a warehouse supervisor watches pressure gauge as he refills 100-pound LPG cylinder.

By

ELMER O. MATTOCKS, Asst. Director
Department of Technical Services
American Petroleum Institute

Use Liquefied Petroleum Gas.....Safely

carbons: propane, propylene, isobutane, normal butane, or butylenes.

Liquefied petroleum gases are produced commercially from either natural gas sources or the refining of crude oil. Liquefied petroleum gas is made when processing natural gas in gasoline plants especially prior to sending the natural gas through transmission lines. Likewise, the processing of gas in cycling plants results in the extraction of liquefied petroleum gas. The light gases formed during the various steps in refining crude oil generally contain varying amounts of liquefied petroleum gases. According to the Bureau of Mines' statistics approximately 65 per cent of the recovered

Loading railroad tank car with LPG. These cars, especially adapted to carry the liquefied gas, are equipped with a special gauging device, thermometer well, a loading or discharging connection, a gas release connection and a sampling line.

liquefied petroleum gas comes from natural sources while 35 per cent comes from refinery sources.

Liquefied petroleum gases at normal atmospheric temperatures and pressures exist as a gas. Under slight pressures they may be liquefied. In this concentrated liquid form they can be shipped, handled, and stored very economically.

Definition of Safety

Before entering into a discussion of the safety of storing and utilizing liquefied petroleum gas, it appears desirable to define "safety." For the sake of this discussion, safety is defined as the development, incorporation, and maintenance of engineering principles in the transportation, storage, handling, and utilizing of liquefied petroleum gas so as to offer maximum economic protection to property with a minimum possible hazard to human life.

From this definition it is seen that the safeness of an installation is based primarily on engineering principles. The purpose of this discussion is to set forth some of the major engineering principles involved in the storage, handling, and utilizing of liquefied petroleum gas. While it is recognized that the human element enters into the handling and using of LPG, nevertheless, by maximum application of sound engineering principles, the potential hazards can be reduced to a minimum.

Engineering for Safety has been studied extensively by the Committee on Gases of the National Fire Protection Association. This organization issues NFPA Pamphlet No. 58 entitled, "Standards for the Storage and Handling of Liquefied Petroleum Gases." The National Board of Fire Underwriters likewise issued a Pamphlet No. 58 containing similar information. This committee also sponsors Pamphlet No. 59 entitled, "Standards for Liquefied Petroleum Gases at Utility Gas Plants." A large amount of the material used in this discussion is based on the standards set forth by the National Fire Protection Association.

Properties of Liquefied Petroleum Gas

Before a safe method of storing, handling, and using LPG can be developed, it is necessary to be reasonably well acquainted with its physical properties.

One of the most important physical properties of LPG is its vapor pressure. If the vapors and the liquid in a container are in equilibrium with each other, the pressure existing in the container will depend directly upon the temperature of the liquid. Each of the hydrocarbons existing in liquefied petroleum gases exerts a different pressure at the same temperature.

Therefore, for a given liquid temperature the pressure in a container depends directly on the particular hydrocarbons in the LPG and on the quantity of each hydrocarbon present.

If it is desired to reduce the pressure in a tank containing LPG it is only necessary to reduce the temperature of its contents. Likewise, if the contents are heated by the sun or by an external fire surrounding the container, the pressure within the container will rise.

Making a farm delivery, dealer shuts off valve before removing empty cylinder.

To understand the combustion characteristics of liquefied petroleum gases, it is necessary to know its flame speed or rate of flame propagation. Liquefied petroleum gases, as represented by butane and propane, have a slightly higher flame speed than does methane. On the other hand, manufactured gas flame speeds are considerably higher than LPG or natural gas.

Because the liquid portion of liquefied petroleum gas has a relatively high coefficient of expansion, proper provision must be made when filling containers to allow sufficient vapor space so that the container will not become liquid full at the maximum temperature ordinarily encountered.

Storage Containers

Before a pressure vessel can be constructed to hold LPG it is necessary to establish the maximum pressure which will be obtained in the vessel during operating conditions. This is called its design pressure. While pressure vessels used in process operations and in the storage of air are operated generally at a constant pressure which is near or equal to the design pressure, containers used in the storage of liquefied petroleum gases have an operating pressure which is directly dependent upon the composition of the liquefied petroleum gas and the temperature of the liquid and gas in the container. It is necessary therefore, when storing liquefied petroleum gas, to ascertain if possible, the maximum temperature to which the container contents will be raised under normal operating conditions.

The maximum temperature of the container contents resulting from the temperature of the sun and of the adjacent atmosphere depends to a great extent on the size of the container, and to some extent on the color and condition of the outside surface. While it is possible to measure with reasonable accuracy the effect of the atmospheric temperature surrounding the container, it is difficult to measure the effect of the temperature of the portion of the container exposed to the sun temperature and *(To page 44)*

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Model 213P Scrubber-Vac at left, for heavy duty scrubbing of large-area floors, has a 26-inch brush spread, and cleans up to 8,750 sq. ft. per hour! (Powder dispenser is optional.) *Finnell* makes *Scrubber-Vac Machines* in a full range of sizes — for small, vast, and intermediate operations — and in *self-powered* as well as *electric* models. From this complete line, you can choose the size and model that's exactly right for *your* job (no need to *over-buy* or *under-buy*). It's also good to know that you can lease or purchase a *Scrubber-Vac,* and that *there's a Finnell man nearby* to help train your maintenance operators in the proper use of the machine and to make periodic check-ups. For demonstration, consultation, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 4109 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

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Take Pictures of disorderly and unsafe conditions. See that corrective action is completed.

INDUSTRIAL HOUSEKEEPING I

BEFORE →

AND

In the Shop . . . . . .

AFTER →

Good industrial housekeeping cannot be achieved with an occasional grand clean-up. It must be carefully planned and consistently executed on a periodic basis with follow-up inspections.

By LELAND H. JOHNSON
Assistant Chief Engineer
Ore Mines & Quarries
Tennessee Coal & Iron Div.
U. S. Steel Co., Bessemer, Ala.

For detailed descriptions of maintenance equipment, see pages 303–367 of "Best's Safety & Maintenance Directory" 1952–53 Edition.

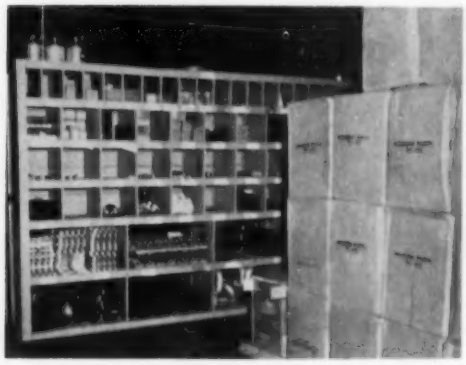
HOUSEKEEPING is definitely one of the basic divisions of safety engineering. The purpose of an industrial good housekeeping program is to promote order and cleanliness throughout the organization. This has been summarized many times by the phrase, "A place for everything and everything in its place." The start of a good program is an analysis of physical plant facilities to determine all factors of tonnage and volume of materials to be handled, the amounts required at the successive steps of the process, allowance of the spaces necessary, and the methods to be used in handling and transporting the materials and articles.

In a newly designed plant, machinery should be so located that there is an even flow of the materials from the raw to the intermediate or finished state. In plants that are expanding, a thorough study with drawings and models will usually show that production lines can be straightened, cluttered aisles cleared, power lines removed from reach or recessed in the floors, and moving machinery properly guarded. The

G LENDS A HAND TO SAFETY

In the Yard

In the Storeroom (Turn the page)



program should be charted for all the plant property from the front walk to the rear fence.

Receiving and Storage

The first step is to develop an orderly and efficient receiving and storage program. The items to consider are as follows:

1. Height of pile: This is dependent upon the character of material and the consequent danger of toppling, the means used in piling and removal, the traffic nearby and interference with fire protection facilities. At least 18 inches should be allowed below sprinkler systems.

2. Strength of support: The allowable floor loads should be posted in such a manner that all employees will know the maximum loading of the material in question. No floor should be so loaded as to have a factor of safety of less than four.

3. Evenness of support and its continued stability: These factors apply particularly to yard piling where uneven ground, or moisture may cause toppling.

4. Location: Aisle traffic or the presence of work benches or machines may make it necessary to limit the height of material to be piled.

5. Piling small articles: Containers suited to the nature of the articles are commonly used. These are usually designed in the form of wheeled or truck pick-up containers, or, at times, trays that may be stacked.

6. Pipe or other long stock: Suitable racks aid handling but projecting ends should be protected by location, railings, or barriers.

7. Mechanical aids: The use of "strong-arm" methods instead of some form of stacker, piler, hoist or carrier is a fault commonly found. Progressive management will continuously seek better methods of piling and incidental handling.

8. Tool housekeeping: Racks and holders suited to the size and shape

of the articles should be provided for all hand tools, jigs, and other machine fixtures. Frequency of use, value of article, possibility of damage, and the system of maintenance used will determine the location of such racks. Tools frequently used at a bench or machine should be provided with racks or holders on the bench or at the machine. Wheeled racks holding a set of tools and parts needed at a given machine or station are very helpful.

9. Width and layout of aisles: No specific rule can be laid down, though it is well to point out that aisles too narrow for safety are also too narrow for efficiency. Aisles carrying considerable two-way hand or powered truck traffic should be three feet wider than twice the width of trucks used. The aisles should be marked clearly, both with signs and stripes.

10. Handling dangerous materials: Such materials as oils, explosives, acids, combustible gases and toxic substances should be handled and stored only under established safe procedures. Reference should be made to local, state, and federal regulations concerning the handling and use of these materials.

(From other page) . . . . . .***On the Premises***

Keep Painted

Painting is important to good housekeeping. Painted walls and equipment encourage the employee to be clean and orderly in his work and personal habits. The Tennessee Coal and Iron Division has planned its painting schedules to allow a repaint job on all surfaces at about three-year intervals.

Many companies paint corners white in toilets and washrooms, various places in the work rooms, and on stairways and aisles. This adds to the general appearance and discourages such unsanitary practices as spitting and discarding various types of waste. The painting of handrails, machine guards and other equipment not only prevents rust, but adds to general appearance and safety. The use of standard colors in painting various utility lines and emergency equipment is considered good safety practice since it tends to identify similar equipment throughout the plant. For instance, each time an employee sees a red color, it should relate to fire protective equipment or fire fighting facilities. Painting to a large extent contributes to good lighting through reflection. The use of colors should have a functional purpose and definite meaning. However, caution should be exercised to see that a colored paint is not substituted for a needed guard.

Floor Maintenance

The floors of all buildings in which employees work should be maintained in a clean condition and, insofar as possible, in a dry condition. Where wet processes are in operation regularly, causing wet floor conditions, the floors should be drained as well as practicable, or false floors, platforms, mats, duckboards, or other dry standing places should be provided. Floors should be kept in good repair and free from oil, protruding nails, splinters, holes and loose boards.

So far as is practicable, sweeping and cleaning should be done outside of working hours and in such a manner as to avoid the dissemination of dust. Cleaning can be kept to a minimum if proper pans, drains, and splash guards are installed around machinery to prevent spillage and drippage and if exhaust systems are installed to remove dust and small waste at the point of origin. Slippery floors and surfaces can be minimized by use of paints containing abrasive particles, by use of abrasive treads, by roughening metal tile or concrete with a tool or with acid, and *(To page 59)*

Safety in Tire Production

COMMERCIAL production of synthetic rubber in small quantities started in the United States in 1930. This early effort is a far cry from last year's 1,166,000,000 pounds which were valued at $301,000,000.

Equally startling is the high-speed machinery used today to make the product. A leading manufacturer of this kind of machinery is Industrial Ovens, Inc. of Cleveland, Ohio. Their post calender dipping and drying systems are in wide use by virtually every outstanding tire manufacturer in America.

Production of rubber tires on Industrial's equipment is a complicated process comprising many steps. By the very nature of raw materials used and manufacturing techniques employed, a number of potential fire explosion hazards are created.

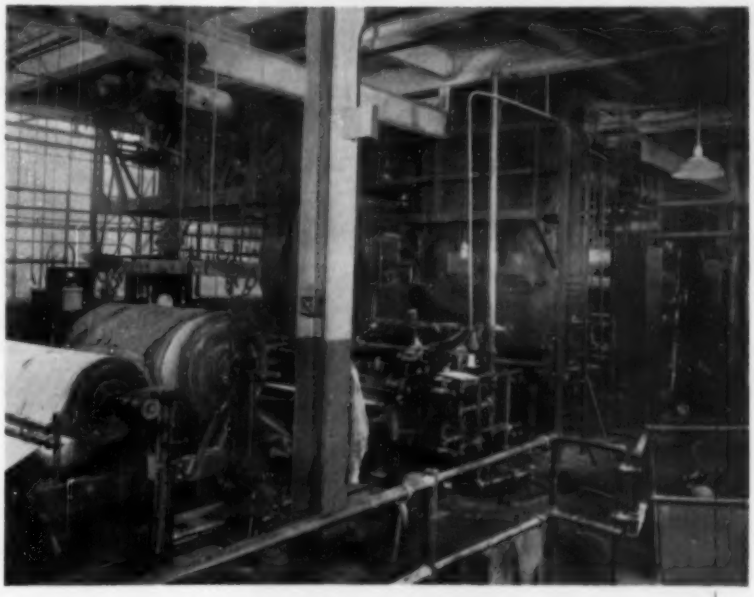
Here the rubberized fabric enters drying oven from the dip tank. Every precaution has been taken to prevent fire or explosion arising from an accumulation of explosive vapors or the flammable web itself. Two multiple-jet nozzles for the discharge of carbon dioxide can be seen flanged into side of the oven (left center and bottom).

The most hazardous of these dangers exists at the very beginning of the operation where the base fabric, usually weftless or pick weave rayon, is passed through a coating calender, discharged into a dip tank, and finally dried and cooled.

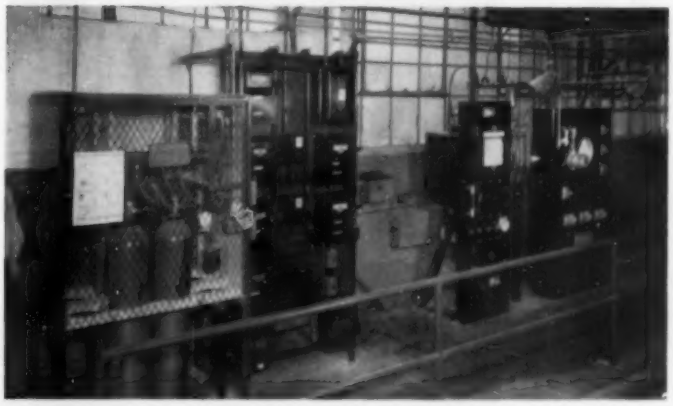
Flammable Materials

Fabrication starts when 60" wide bolts of rayon cloth are fed as a continuous web through *(To page 50)*

High-speed synthetic rubber processing equipment has built-in "stops" and automatic carbon dioxide fire extinguishing system.



This type of post calender dipping and drying machinery is used by nearly all the leading manufacturers in the United States. Because of the flammable materials used and manufacturing techniques employed, elaborate ventilating systems, humidity controls, static collectors, stops, and other protective devices are built into the equipment. However, should fire flash, an automatic carbon dioxide extinguishing system will flood the area.



Carbon dioxide for the automatic fire extinguishing system installed on the post calender dipping and drying equipment is contained in the four 50-pound cylinders at left. A pull box is affixed to the protective closure in case manual release of gas is desired. The two control boards at right give the operator of the equipment a continuous record of concentrations of explosive mixtures and vapors at multiple points throughout the system. The units are interlocked into the system and have both audible and visual danger indicators, together with automatic shut-down controls in case the vapors rise above safe limits. The fourth board mounts the electrical circuits.

SAFETY FOR HIGH-LEVEL WORK

Maintenance and construction workers are often placed in the hazardous position of having to perform their jobs at high levels above the ground. Here are some ideas for taking accidents out of high level jobs.

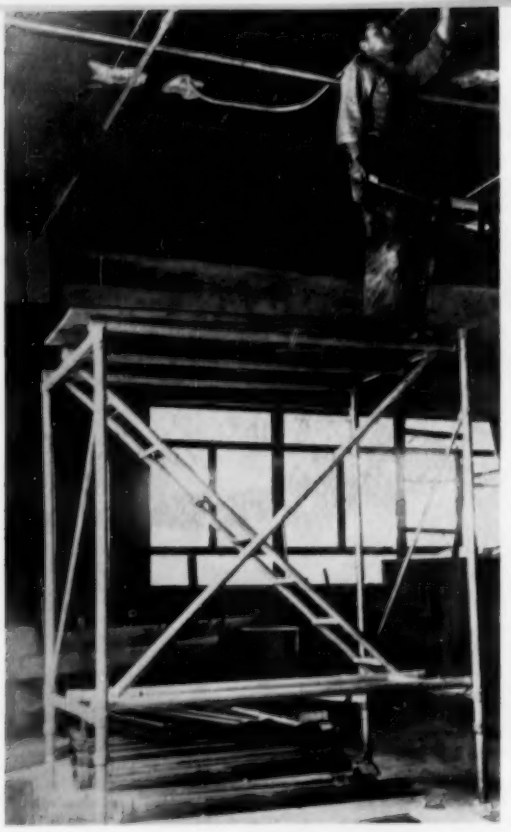


Figure 1. This aluminum rolling tower affords a working platform of 27 square feet, heights adjustable to 8 feet.

INDUSTRY, often with good reason, is slow to discard the tried and true in favor of the new. However, without new ideas and experiments, there would be no advancement; and when we see recent developments being adopted, we can be certain that the new idea must have considerable merit and should be studied for wider acceptance by industry in general.

A case in point is the increasing use of rolling aluminum towers. These versatile maintenance scaffolds have been on the market for only a few years but are receiving more and more attention because of their lightness and maneuverability for work at low and medium heights.

A typical example of the use of the rolling aluminum tower might be a recent job of the James A. Nelson Co. of San Francisco, plumbing contractors. In size, the company is representative of hundreds of plumbing businesses in cities over 200,000. The job was also an aver-

Figure 2. At Caterpillar's Joliet, Ill. plant, a 6,000-pound capacity electric crane truck equipped with a new type of articulated platform is used in maintenance of lighting and overhead equipment difficult to reach.

Figure 3. The crane truck with its new platform is also used for outdoor maintenance.

Figure 4. Expanded metal walkway, hung from the ceiling of the concrete Hippodrome in St. Paul, permits servicing of lighting fixtures, transformers and ventilating system.

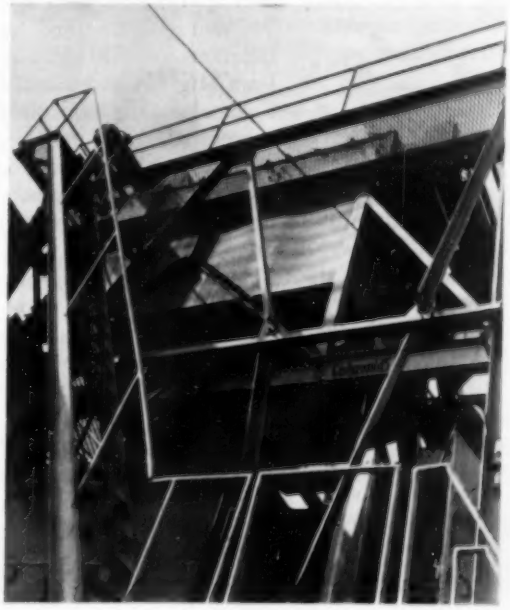
Figure 5. The ceiling walkway has panels of sturdy expanded metal to provide a safe walking surface 78 feet above the ground.

For detailed descriptions of above-ground safety equipment, see pages 368–399 of "Best's Safety & Maintenance Directory" 1952–1953 Edition.

age one—a plumbing installation for a 12,000 square foot research laboratory at the California's Packing Corporation's San Francisco branch.

As few as ten years ago most plumbers had never so much as handled a piece of aluminum pipe or equipment. However, the Nelson Company, which owns several of these towers, has found that because of their light weight and ease of erection they save considerable time over previous methods of work. The single tower section, as shown in Figure 1, is 4½ feet wide, 6 feet long, and 6 feet high (adjustable by means of screw jack bases to 8 feet), affording a working platform of 27 square feet. Full or half sections can be added to raise the tower to any height desired. The tower section folds to a compact unit 6½ inches thick and weighing 64 pounds. One man can carry the tower and he can erect it in two or three minutes.

Figure 6. Stairway with non-skid treads leads from ground level up to the walkway, also made of expanded metal, surrounding screen unit at top of bituminous mixing plant.



FEATURE

This is the second of a series of three feature articles on Above-Ground Safety. The third article of the series will appear in the October issue of SAFETY MAINTENANCE & PRODUCTION.

Use of aluminum rolling towers obviously is not limited to the plumbing industry. Similar safety, savings and convenience can be realized in factory maintenance, maintenance of offices and buildings, and in all branches of the construction industry.

Maintenance With a Boom

Maintenance goes over with a "boom" at the new plant of Caterpillar Tractor Co. in Joliet, Illinois. A 6,000-pound capacity electric crane truck equipped with a new type articulated platform is used for faster, easier maintenance of lighting and other overhead equipment. (See Figure 2.) The crane can position the boom and platform for overhead work above machine tools and other obstacles—in locations difficult to reach by other means.

In operation, the maintenance man and materials are picked up by lowering the boom until the platform rests on the floor. Positive mechanical linkage on the boom keeps the platform parallel with the floor at all times, regardless of boom elevation. For maximum coverage from a given aisle location, the boom can be extended to lengths up to 19 feet and swung in a 270° arc.

This same crane truck also is used for outdoor maintenance work. Here, it can reach from the street over grass and sidewalks to service the company's street lighting equipment. (See Figure 3.)

Ceiling Walkway

Suspended from the domed ceiling of the recently completed Minnesota State Fair Grounds Hippodrome in St. Paul is a giant walkway constructed of steel frame work carrying panels of expanded metal to form the safety walking surface. (See Figures 4 & 5.)

The walkway provides access to the Hippodrome's lighting fixtures, transformers, and ventilating system; permits attachment of circus aerial gear; and supports elevating machinery to raise the judges platform during the ten-day annual State Fair.

As a high strength/weight ratio was important in construction of the ceiling-hung walkway, Kindy C. Wright & Associates, St. Paul architect, designed it around removable panels of expanded metal laid unattached into an angle iron framework.

Running the entire length of the Hippodrome, the walkway is 367 feet long and has five crosswalks, each 71 feet long. To provide a safe walking surface, with through-visibility, 8,335 pounds of expanded metal were used in sections 36 inches wide and 35½ inches long. The size of individual panels was kept to these dimensions so that riggers on the walkway can handle them easily.

Expanded metal is made by slitting and stretching solid steel sheet. It is used in construction for many purposes because of its high strength/weight factor and durability.

In addition to its architectural characteristics, expanded metal also possesses several safety advantages. Its skidproof surface prevents accidental slipping and falling, and the open work pattern allows the passage of water, dirt, and dust particles that otherwise would accumulate and make walking surfaces slippery and dangerous. These safety advantages are of particular importance in outdoor applications, such as the stairway and walkway used on the bituminous mixing plant made by Iowa Mfg. Co. and shown in Figure 6. Incorporating a mixing unit, dust collector, drier, and feed hopper, the mixing plant has walkways and stairways that permit easy access to all points requiring process inspection or maintenance.

The above examples of improved working conditions for off-the-ground jobs show that industry's interest in accident prevention is very much alive. At the same time, these and similar innovations indicate once again that safety can help maintenance so that maintenance can help safety—and both can give a healthy boost to production.

Picture credits—Fig. 1: Up-Right Scaffolds; Figs. 2 & 3: Yale & Towne Mfg. Co.; Figs. 4, 5 & 6: Wheeling Corrugating Co.

Accident-Prones

(From page 26) Pegboard Test. The hypochondriasis scale on the Minnesota Personality Inventory was conspicious in its lack of significance as no significant differences were found between the test scores of the accident-prone group and the accident-free group on any of the scales on the Minnesota Personality Inventory.

A significant difference was found, however, between the test scores of the accident-prone group and the accident-free group on the Mechanical scale of the Kuder Interest Preference. No significant differences were found on any of the remaining sub-scales of the Kuder Interest Preference. On the Mechanical scale, the mean accident-free score was at the 83rd percentile while the mean accident-prone score was at the 65th percentile. The possibility that this difference could have been caused by chance is 5 times in 100.

Significance of Tests

The evidence seems to indicate that individuals who have had fewer industrial accidents possess a higher degree of mechanical interest than individuals with a record of frequent industrial accidents. Interest may contribute to the development of desirable attitudes toward safety and to an awareness of potential hazards. Thus a pattern of high interest scores on the Mechanical scale of the Kuder would seem to be desirable in pre-employment screening. It may have an influence on the number of industrial accidents and it is to be hoped that such a high interest score increases the satisfaction, morale and general stability of the hourly employees.

In general, however, the attempt to predict accident-proneness or freedom from accident on the basis of pre-employment test scores available, proved impossible. While the battery of tests is making a valuable contribution to the appraisal and evaluation of applicants for employment, it cannot be made to serve

a dual role and help to predict accident-proneness at the same time.

It is quite possible that a less structured test of personality, such as the projective Thematic Apperception Test with its picture cards would reveal to a trained interpreter some of the dominant drives, emotions, sentiments, complexes and conflicts representative of the accident-prone personality and thus help to distinguish this group from the general population.

The successful prediction of accident-proneness on the basis of pre-employment test represents an area of research which promises rich rewards but which is relatively unexplored at present. Joseph Tiffen [3] and Morris Viteles [4] have well explained how an employee tends to keep his same relative accident rate from one time to another, by showing that each employee has relatively the same number of visits to the hospital because of injuries from year to year.

Although it may be difficult, if not impossible to predict the degree of an individual's accident proneness from standardized pre-employment tests, an effort can be made to identify these accident-prone individuals during the pre-employment interview situation.

Men with a past history of accident-proneness may be prevented from having accidents according to the degree of safety activities by the management in an industrial situation and to the extent which an employee is willing to practice these activities. The responsibility is shared by all the members of an industrial plant. An awareness of "accident-proneness," however, is necessary to achieve this cooperation. Individuals can be helped to achieve insight into their own tendencies toward accident-proneness; and the positive identification of individuals requiring special guidance would mark an important step toward the human relations ideal of adapting the industrial situation to individual differences.

[3] Joseph Tiffen, INDUSTRIAL PSYCHOLOGY, New York, Prentice-Hall, Inc., 1942, Ch. II, "Accident and Safety."
[4] Morris S. Viteles, INDUSTRIAL PSYCHOLOGY, New York, W. W. Norton & Co., 1932, Ch. XVI, "Safety at Work."

. . but he finished the job wearing a

Scott Air-Pak
(TRADE MARK)

"Scott Air-Pak GIVES ME PLENTY OF AIR, KEEPS ME FEELING COOL INSIDE HOT TANKS!"

An Eastern dye plant needed a painting job done on the inside of a large tank. Although the paint was of a particularly obnoxious compound, the man hired for the job scoffed at the offer of safety breathing equipment. He entered the tank, only to stay inside for six minutes. Making a second attempt to paint the interior without protection, he lasted only one-half minute. The third time he put on a SCOTT AIR-PAK with a hose attached to an air cylinder and stayed in the tank for *three hours*, completing the entire job. Questioned as to SCOTT AIR-PAK's operation, he said "I never knew that working inside of a hot tank could be so cool and comfortable — and safe. I'm taking no more chances!"

Hundreds of other industrial plants throughout the country have discovered that using SCOTT AIR-PAKS is the safest, most efficient way to complete work in hazardous atmospheres quickly, easily, economically.

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SCOTT AVIATION CORP.
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EXPORT: SOUTHERN OXYGEN CO., 157 Chambers Street, New York 7, N. Y.

(For further details, use the Reader's Inquiry Card on page 77)

In *TOE SAFETY...* it's the INSIDE

We concede that no safety box toe can be made regardless of its basic steel, its gauge, or its profile that can not be collapsed by unusually extreme striking force. As we see it, the job of a steel safety box toe is to reduce as far as possible the potential of the accident — to be so protective as to cause an important percentage of amputations to become fractures, and fracture cases to become abrasions, and in innumerable instances of lesser accident save the wearer from as much as a bruise. Since the best steels are already in use and since increased gauge means wearer discomfort from weight, only architectural improvement can make steel toes safer. Toes that resist back-tipping — that buttress the toe dome under extreme toe-spring — that present greater bearing surface against the shoe upper in resisting lateral spreading — may well mean the difference between minor and serious injury to the wearer. Such toes are available to your safety shoe supplier. They are known as WINGUARDS.

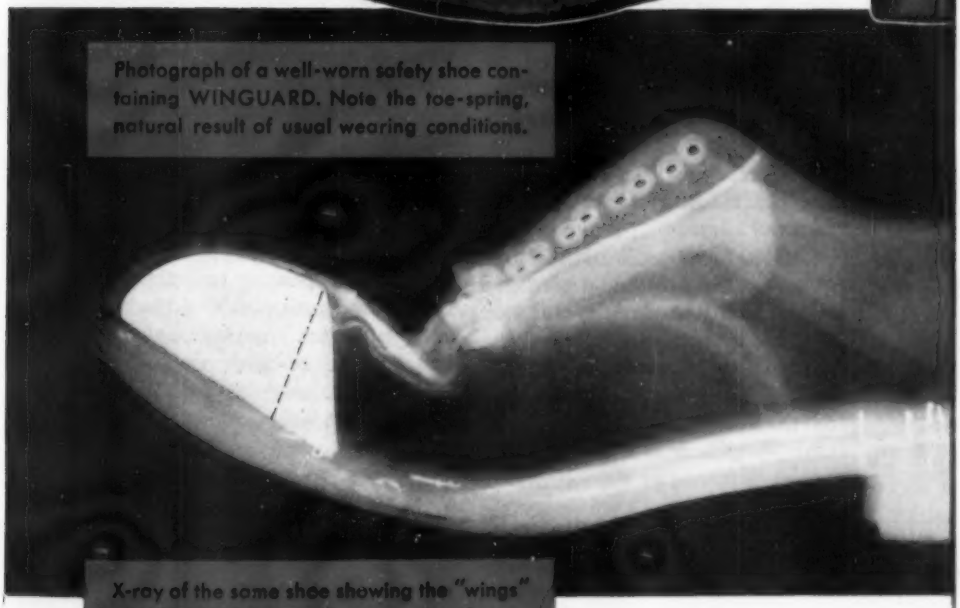
400
FOR SAFETY DRESS SHOES

500
FOR SAFETY WORK SHOES

(For further details on advertised products, use the Reader's Inquiry Card on page 77)

story that counts

Photograph of a well-worn safety shoe containing WINGUARD. Note the toe-spring, natural result of usual wearing conditions.



X-ray of the same shoe showing the "wings" of WINGUARD still fully supporting the toe dome. Dotted line indicates the back edge position of non-wing types after toe-spring has forced the dome area to overhang the toe members.

WINGUARDS

safest steel box toes

SAFETY SHOE MANUFACTURERS LICENSED TO USE WINGUARD STEEL SAFETY BOX TOES

as of Jan. 1, 1952

UNITED STATES

Allen-Squire Co.
Spencer, Mass.

G. H. Bass & Co.
Wilton, Maine

Belleville Shoe Mfg. Co.
Belleville, Illinois

Curtis Shoe Co., Inc.
Marlboro, Mass.

Charles A. Eaton Co.
Brockton, Mass.

Endicott Johnson Corp.
Endicott, N. Y.

General Shoe Corp.
Nashville, Tenn.

Georgia Shoe Mfg. Co.
Buford, Georgia

Joseph M. Herman Shoe Co.
Millis, Mass.

Hill Bros. Co.
Hudson, Mass.

Holland-Racine Shoes, Inc.
Holland, Michigan

International Shoe Co.
St. Louis, Missouri
Iron Age Division

H. Childs & Co., Inc.
Pittsburgh, Penn.

Knapp Bros. Shoe Mfg. Corp.
Brockton, Mass.

Leverenz Shoe Co.
Sheboygan, Wisconsin

J. F. McElwain Co.
Nashua, N. H.

Milwaukee Shoe Co.
Milwaukee, Wisconsin

Museback Shoe Co.
Oconomowoc, Wisconsin

A. H. Weinbrenner Co.
Milwaukee, Wisconsin

Wolverine Shoe & Tanning Corp.
Rockford, Michigan

CANADA

J. A. Blais, Inc.
St. Cesaire, P. Q.

G. A. Boulet, Limited
St. Tite, P. Q.

Canada West Shoe Mfg. Co., Ltd.
Winnipeg, Manitoba

J. A. & M. Cote, Ltd.
St. Hyacinthe, P.Q.

Daoust, Lalonde, Inc.
Montreal, P. Q.

Frontenac Shoe Ltd.
Quebec City, P. Q.

The G and B Shoe Co.
Campbellford, Ont.

Grob Shoe Co., Ltd.
Kitchener, Ontario

Hydro City Shoe Mfrs. Ltd.
Kitchener, Ontario

Palmer-McLellan Shoe Co., Ltd.
Fredericton, N. B.

The T. Sisman Shoe Co., Ltd.
Aurora, Ontario

The Stag Shoe Co., Ltd.
Montreal, P. Q.

Sterling Bros., Limited
London, Ontario

Tetrault Shoe Ltd.
Montreal, P. Q.

The Tillsonburg Shoe Co.
Tillsonburg, Ontario

Underhills' Limited
Barrie, Ontario

Valentine & Martin Ltd.
Kitchener, Ontario

Williams Shoe Ltd.
Brampton, Ontario

SAFETY BOX TOE COMPANY
812 Statler Office Building
Boston 16, Massachusetts

subsidiary of
Beckwith Manufacturing Company, Dover, N. H., sales agents for the United States. Canadian sales agents: Beckwith Box Toe Ltd., Sherbrooke, P.Q.

TRANSPORTATION

Passing Problems

PASSING the car ahead safely depends upon much more than a heavy foot on the accelerator, but because too many drivers rely solely on their gas pedals, improper passing has become one of the five leading causes of fatal accidents, according to the public education department of a leading insurance company, which recently published an illustrated booklet outlining safe passing techniques.

A unique feature of the 16-page booklet, entitled "Pass, Friend," is the easy-to-read chart showing the number of feet of clear road required to pass safely at speeds from 20 to 70 miles per hour, both with and without oncoming traffic.

Few drivers realize that at 50 miles an hour they need 1200 feet—or almost a quarter of a mile—to pass a car ahead traveling 10 miles an hour slower, provided there is no oncoming traffic. A car approaching from the opposite direction at the same speed, however, doubles the minimum safe passing distance, making it 2400 feet.

If motorists were familiar with the passing distances required at various speeds and observed other rules of the road in passing, many of the thousands of accidents caused each year by improper passing could be avoided.

Better Driver Selection

FURTHER improvement in the safety record of the national fleet of commercial motor vehicles hinges largely on the selection of better drivers and improving the equipment they operate, according to interim findings published by the Harvard University School of Public Health, according to "Transit Topics" and reported in "Highway Research Abstracts."

These conclusions were contained in a series of "Progress reports" in a three-year research endeavor which began in September 1949. The research is sponsored jointly by the American Trucking Associations, the National Association of Motor Bus Operators, and the National Insurance Companies.

Harvard researchers compiling the Association of Automotive Mutual report are studying safety factors involving commercial vehicle operations in all sections of the country. On the research team are scientists representing the medical and engineering professions, psychiatrists, statisticians, anthropologists, and industrial experts.

The report said that the truck and bus industries have "failed to take full advantage" of the benefits of employment application blanks, motor vehicle records and personnel termination forms in selecting new men and evaluating driver efficiency.

Last year the researchers checked 746 application blanks in the files of 65 trucking companies and found that 34 percent of them were incomplete in one or more items "of major significance." Among the items omitted were the full name, home address, social security number, date of birth, marital status, driver's license, motor vehicle record, and police record. Of the group of drivers on whom the personnel records were incomplete, a further check revealed that 58 percent were listed as having been arrested as traffic law violators.

"This is significant," the report declared, "for in this group the employer has less than an even chance of employing a man whose vehicle record predicts that he will drive safely."

Preliminary studies were made to test the applicability of the theory that "a man drives as he lives." This theory holds that if one is careless in regard to his personal affairs, such as family commitments, financial matters, legal responsibilities, and health, he will also be careless in his method of driving.

Equipment Deficiencies

To obtain information on the effect of equipment designs on driver efficiency the researchers interviewed 100 bus drivers, 100 truck drivers plus 50 Roadeo champions. More than 300 different ideas were expressed in 1,144 responses. The trend of suggestions was the same in all three groups.

Design defects were noted in seating, vision from the windshield, pedals, hand brakes, gear shift, steering wheels, instruments, switches, brakes, ventilation and heating, and doors.

Other data relating to design deficiency was obtained by a physical anthropologist's measurements of 250 bus and truck drivers. These included measurements in both sitting and standing positions.

Fewer Accidents For Oil Trucks

THE steady decline in accidents involving trucks and automobiles operated by the oil industry continued during 1951, according to the American Petroleum Institute's Twentieth Summary of Motor Vehicle Accidents. The 1951 accident frequency rate of 18.6 per 100 vehicles is the lowest in five years. The rate of 1.22 accidents per 100,000 vehicle miles is the lowest since 1945 and marks the fourth consecutive year in which there has been a decrease in this category.

Data in the summary represents

the collective experience of 213 companies that operated 80,356 motor vehicles during the year. Of the total number of companies reporting, 156 maintain complete mileage records. These indicated that 64,160 vehicles that they operated during 1951 traveled 1,037,391,000 miles and were involved in 12,667 accidents. In other words, the vehicles referred to had an average of one accident in 81,897 miles of travel.

Those reports that contain separate information covering passenger cars only show that 21,987 of them traveled 148,841 miles per accident. Trucks, reported separately, of which there were 28,261, averaged 58,493 miles of travel to each accident.

In gathering its statistics, the Institute uses the following definition: "A reportable motor-vehicle accident is an accident in which a motor vehicle in company service is involved, unless properly parked, resulting in a death, personal injury, or property damage regardless of who was hurt, what property was damaged, or who was responsible." This is the same definition used by the National Safety Council in gathering motor-vehicle accident data from fleet and industrial operators.

Safe Passing Campaign

A TRUCKING industry official called on professional truck drivers to "signal your turns—get in the proper lane."

J. T. Outlaw, Executive Secretary of North Carolina Motor Carriers Association issued the statement as a summer reminder to all truckers participating in the Association's "I'll Help You Pass" campaign.

This national campaign, under auspices of the American Trucking Association, for safe passing on highways and to stop "tailgating" is being sponsored in North Carolina by the Association's Council of Safety Supervisors. "Council members have already secured pledges of cooperation from 8909 professional truck drivers and operators," Outlaw stated.

Many signs are already attached to the rear of trucks reading "I'll Help You Pass."

"A large proportion of highway accidents involving both truck and passenger cars are traceable to improper passing and 'tailgating,'" Outlaw continued. He urged passenger car drivers to cooperate with all truck drivers in furthering the corrective campaign.

Traffic Accidents Linked to Moral Weakness

LOWER standards of public morality which have accompanied the "political degeneration" of recent years were linked to the increased toll of death and injury on the nation's highways by Paul H. Blaisdell, public safety director of the Association of Casualty and Surety Companies, in an address before the All-Ohio Safety Congress.

"In traffic safety the outward manifestation of this tendency is displayed by the man who sneaks by the stop sign late at night, by the woman who double-parks for just a moment, by the teen-ager who boasts about beating the train to the crossing. Each successful evasion predisposes another attempt. With a record of success in bypassing traffic safety regulations it is easy to transfer the evasion to income tax returns, slot machines and book makers—or vice versa."

Mr. Blaisdell, who until April 1 was executive director of the National Committee for Traffic Safety, comprising 86 leading organizations and businesses active in that field, asserted that "the apathy which we show to our political responsibility is the same apathy which destroys our power in traffic accident prevention."

Speaking on the topic, "Let's Put Action Into the Action Program"—a program developed by the first President's Highway Safety Conference in 1946 to encourage public support, uniform laws and better enforcement in behalf of greater traffic safety—Mr. Blaisdell declared that while that program is "sound and workable," it cannot remain static. "We have only caught up with what we should have been doing many years prior to 1946," he said.

Although the possibility of an effective program of public support seemingly is "buried so deeply in the mire of public apathy that there is no prospect for a constructive future," the speaker said Americans traditionally "do their best work when the going is the hardest."

"Public support, whether based on a business or professional interest in highway safety or on the pure altruism of public welfare, carries with it the full force and effect of public opinion," Mr. Blaisdell declared. The authorities who want favorable public opinion behind their traffic safety efforts have only to show that it will be welcomed and accepted. That is the first specific way in which we can build a new public understanding and acceptance for traffic safety and traffic enforcement activities."

Agreement upon just what constitutes the official highway safety program of a state or a community is another way to gain public support, he pointed out. "No objective, purposeful, promotional activity can be expected from civic organizations or

business leadership," he said, "unless the public officials know what they need, what they want and how they propose to get it. Above all, public officials have a duty to develop a program for the public to support."

The speaker said there is no substitute for strong leadership in any community's highway safety program. He expressed the viewpoint that "it makes no difference whether that leader is a minister, a merchant, an insurance agent, a lawyer or a housewife as long as the leadership emerges and as long as we are aiming at the same target."

Oil Products for Fewer Lubrications Demanded

A 5,000-MILE lubrication and inspection period for over-the-road trucks to replace the present recommended interval of 1,000 miles for grease gun lubricated parts was advocated by John C. Hale, assistant to the president and director of maintenance, Refiners Transport and Terminal Corp., Detroit.

Hale spoke at the opening day's session of the first 1952 meeting of the Lubrication Committee of the American Petroleum Institute's Division of Marketing at the Sheraton-Cadillac Hotel.

Speaking from the point of view of a fleet operator, Hale pointed out that most over-the-road transport vehicles average 10,000 miles per month. If the 1,000-mile grease recommendation is followed, this would call for ten grease jobs a month per vehicle, or one every three days. He questioned whether the recommendation is practical.

Hale declared certain parts of heavy-duty trucks should be inspected, and readjusted if necessary, at about 5,000-mile intervals and asked:

"Why should we not expect that all the service work, including lubrication, be done only at this longer interval? Certainly it is a reasonable assumption on over-the-road vehicles. I can agree . . . that for city trucks once a month may not be too frequent."

Hale asserted the application of a 5,000-mile lubrication and inspection period would increase rather than decrease the volume of petroleum products used by the trucking industry because of more frequent revenue loads and less down time hours.

FORT KNOX "DIXIE DIEWAY" WARNING

Army officials at the Armored Center, Fort Knox, Kentucky, Lt. Colonel Walter B. McKenzie, Assistant Chief of Staff, G-1, and Mr. Lee C. King, Safety Director, inspect one of the several signs cautioning outgoing motorists approaching the treacherous heavily-trafficked U. S. Highway 31-W which bisects the huge military reservation. Now Kentucky's third largest community, Fort Knox supplements the Army vehicle driver safety effort with an intensive educational program pointed at safe operation of private motor vehicles with emphasis on highway courtesy and defensive driving.

U. S. Army Photograph.

Liquefied Petroleum Gas

(From page 30) that portion not exposed to the direct rays of the sun.

Containers of 100 gallon capacity and less, including cylinders constructed in accordance with the Interstate Commerce Commission specifications, are designed for a pressure equivalent to a maximum temperature of 130 F for the container product. For larger containers the pressure corresponding to a product temperature of 115 F is assumed. This latter condition, however, is true only when the container is constructed with a factor of safety of 4.

The question of the number of supports to be used under LPG containers is frequently asked. Since flammable liquid containers often have more than two supports, it is not uncommon to find installers thinking that a similar number of supports are required under LPG containers. Actually the two containers are radically different; the flammable liquids container is a non-pressure container, while the LPG container is a pressure vessel.

If a bottom outlet is used on an

LPG container it is desirable to have it located between the end of the tank and the support. If the outlet is located between the two supports, it is not only difficult to get to for installation, but also difficult to operate the shut-off valve. Likewise, in case of leakage in the bottom outlet connection or piping, air movement is not as free and thereby dilution is not as rapid as if the outlet were located between the support and end of the tank.

One of the most important appurtenances on an LP-Gas container is its relief valve. Assuming that the tank has been properly designed as to working pressure, and assuming that a product with a vapor pressure not exceeding the maximum permitted is placed in the container, the only time that a relief valve is called upon to operate is in case of an emergency. This emergency results from one of two things; namely, overfilling the tank when the relief valve is called upon to relieve excess pressure caused by expansion of liquid, or external fires which raise the pressure of the container contents due to the rapid evaporation of liquid within the container. The prime concern however is that of external fires.

The gas flow requirement for relief valves used on LP-Gas containers is determined according to a formula developed by Mr. Fetterly, an inspector of the Bureau of Explosives of the Association of American Railroads. After years of experience the liquefied petroleum gas industry modified Fetterly's formula slightly by assuming that the temperature to which the external surface was exposed decreased gradually from 1200 F. to 1000 F. for containers whose size increase from 10,000 gallons water capacity to 30,000 gallons water capacity. The reason for the reduced exterior temperature for the larger containers is the improbability that larger containers would be completely enveloped in a fire.

Some years ago the National Fire Protection Association LPG standards required that relief devices in-

(Continued first column, next page)

How long since you tested the gloves your workers wear?

The now widespread practice in industry of test-rating work gloves for specific plant operations has had two important results. (1) Management has been able to improve safety conditions, job efficiency and worker attitudes while, at the same time, greatly reducing glove costs to their companies or employees; (2) Modern types of coated and impregnated fabric gloves have replaced millions of pairs of canvas, leather and unlined rubber gloves on applications involving sharp edged, abrasive or slippery materials or the presence of grease, chemicals or thermal extremes.

These are typical examples:

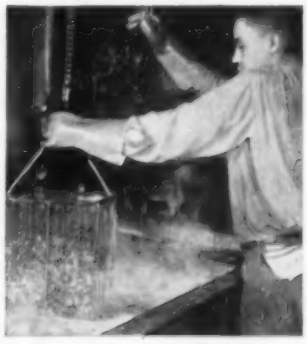
Handling thin strips of stainless steel. Canvas gloves tested 28 hours. Gloves with reinforced neoprene (NEOX) coating tested 228 hours—a 76% cost saving.

Handling plate glass. A 6 months' test showed hand injuries reduced 78% by gloves with cut-resisting, non-slipping rubber-coated palm.

Dip-plating wire products. High injury rate and workers' dissatisfaction ended by replacing easily-snagged unlined rubber gloves with reinforced acid-proof gloves which eliminated hazard.

Handling rough logs and sawing and stacking lumber. Canvas and double-palm gloves tested 2 days; recommended plastic-coated gloves gave 30 days' wear and eliminated injuries from splinters.

Protecting broach rotor core operator from wet broach and rotor coolant carrying sharp slivers. Glove with extra duty reinforced neoprene (NEOX) coating resisted cutting and puncturing action, wore 5 times longer than best gloves previously tested.



Free Offer: Make Your Own Job-Test. Send us a brief description (on business letterhead) of your operation, materials handled, and temperature condition. Without charge we will make recommendation and supply sample gloves and procedure for on-the-job testing. Address Safety Engineering Service, Edmont Mfg. Co., 1256 Walnut St., Coshocton, Ohio.

Edmont job-fitted work gloves

NEOX (reinforced neoprene) • Natural Rubber • Plastic

by the world's largest maker of coated industrial gloves

(For further details, use the Reader's Inquiry Card on page 77)

SAFETY MAINTENANCE & PRODUCTION Salutes a Safety Idea for SEPTEMBER

Guard for Trimming-Knives

SAFETY-MINDED employees in the belt room at Goodrich Tire & Rubber Company's Plant 2 have devised a metal guard for stock-trimming knives. The guards should reduce to a minimum the possibility of injuries.

The guard, which is small and easily detachable, fits all the various Hyde-type knives used in cutting and trimming mechanical goods stock. Placed between the knife blade and handle, this safety device gives positive protection to the hands and fingers during trimming operations. It is currently being installed on all hand knives of this type, according to C. R. Covert, the Plant 2 safety and labor man. In the picture, a belt room employee is shown using a knife equipped with the guard to trim a belt section.

Liquefied Petroleum Gas

(From page 45)

stalled on LPG containers must be flow tested. This was to assure that the flow capacity of relief valves installed on LPG containers would actually meet the requirements set forth by Fetterly's formula. In the 1950 edition of the ASME Unfired Pressure Vessel Code, it is required that relief valves on all unfired pressure vessels must be flow tested for capacity.

It has been the custom of the liquefied petroleum gas industry to set relief valves so they will start to discharge at a pressure not greater than the equivalent design pressure of a container based on a construction factor of safety of 4. In other words, in the case of a propane container which was constructed with a factor of safety of 5 or 200 psig, the maximum start to discharge pressure of the relief valve would be 125 per cent of the design pressure, or 250 psig, which is the equivalent design pressure based on a factor of safety of 4.

Excess Flow Valves

Next to the relief valve, the most important appurtenance on an LPG container is the excess flow valve. The NFPA standards require that all openings from a container except relief valve, gaging device, and filling connection shall be protected with an excess flow valve. An excess flow valve is a slug-type valve which is installed in the line as close to the container as practical. It is held in the open position by the action of a spring. When the pressure drops across the plunger caused by flow of product, either gas or liquid, is equal to or in excess of the spring force, the valve closes. The force of the spring should be such that the flow required to close the valve is less than the capacity of the line in which the excess flow valve is installed.

In lieu of using an excess flow valve, a quick-closing internal valve may be used. The control of the internal mechanism of such valves is equipped generally with a secondary control which is a fusible plug. This will melt and cause the internal valve to close automatically in the case of a fire around the equipment.

(To be continued in the October issue)

Picture credits: Lower left—Cities Service Co.; All other pictures—Standard Oil Co. of New Jersey.

Lloyd A. Blanchard Safety Executive Dies

LLOYD A. BLANCHARD, 58, of Washington, D. C., nationally known safety executive and an outstanding leader in the field of accident prevention for the past 27 years died recently in Washington following a short illness.

Mr. Blanchard had been identified with state and national safety planning for many years. Director of the Rescue Division, Federal Civil Defense Administration, he had been in the federal service since January 1941. His first federal assignment was to head up the safety program of the Construction Division, Office of the Quartermaster General, U. S. Army.

Later, while he was in charge of the safety program of the Corps of Engineers, the Corps was the first and only federal agency to be the recip-

ient of the "Liberty Bell Award," from Liberty Magazine in March 1943, "for outstanding results in conserving manpower through accident prevention." The Corps also received, while Mr. Blanchard was in charge of its safety program, the "Award of Honor for Distinguished Service to Safety," from the National Safety Council.

For four years he was detailed from the Corps of Engineers at the request of the White House to serve full time as Assistant to the General Chairman, Federal Interdepartmental Safety Council. Mr. Blanchard is recognized as having done more than any other individual to promote and develop interest in the federal government to improve its own accident record. He was largely responsible for establishing the first standard professional specifications for safety engineers in the federal service. Mr. Blanchard served as Assistant Executive Director of the President's Conference on Industrial Safety when it was organized in 1948.

Army Award

Mr. Blanchard had been a Director of the National Safety Council, member of the Veterans of Safety, and the American Society of Safety Engineers. He had been active in the Washington, D. C. Chapter of A. S. S. E. In October 1944, Major General Leslie R. Groves, Corps of Engineers, presented Mr. Blanchard with the Army's Exceptional Civilian Service Award "for his substantial contribution to the War Department and the Nation's War effort in conserving manpower through accident prevention. . . ."

In 1925, Mr. Blanchard came into the safety field as Manager of the Springfield (Massachusetts), Safety Council. He then served for six years as Executive Secretary, Governor's Committee on Street and Highway Safety of Massachusetts. Later he served as the Mid-Western and Eastern Representative, National Safety Council.

Burial was at the Arlington National Cemetery.

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(For further details, use the Reader's Inquiry Card on page 77)

THE FIRE FRONT

New Method Tests Flame Resistance of Acoustical Materials

A NEW, automatic method of measuring flame resistance qualities of sound conditioning materials was announced recently after almost a year of research conducted by Armour Research Foundation of Illinois Institute of Technology for the Acoustical Materials Association. The Association is composed of the largest manufacturers of acoustical materials in the country.

The studies are part of the public service program of the Association to secure technical data for future recommendations and standards in the manufacture and use of sound absorbing materials.

This radical improvement is the first automatic method for analyzing the flame resistance of acoustical materials used in offices, industries, institutions and homes, according to Luther G. Ramer, supervisor of the Riverbank Acoustical Laboratories, operated by the Foundation at Geneva, Ill. He also stated that this new method entirely eliminates guesswork from such studies.

The high degree of scientific precision now possible in flame resistance analysis is indicated by the fact that the technique meets all the requirements of the Bureau of Standards, Ramer said.

Briefly, he explained, the technique consists of carefully removing the moisture from samples of acoustical materials in a cabinet which is maintained at room temperature.

After the humidity of all samples has been lowered to 10 per cent by automatically-controlled equipment, the pieces of acoustical materials are placed in another automatic, constant-temperature cabinet, where the humidity is consistently maintained at 35 per cent.

After a specified period, the samples are removed, arranged in a square on a fireproof framework, and the center sample of the square is placed directly over an automatically-controlled gas flame. The flame temperature is gradually increased, through the elaborate control equipment, to a peak temperature, kept there for a predetermined period, and then decreased, all automatically.

The temperatures to which various types of acoustical materials are subjected also are recorded automatically, providing a permanent record of test conditions.

After subjecting the samples to the flame, they are removed under laboratory conditions, and a careful photograph of the square of samples is taken. In that manner the exact degree to which the center sample—as well as any other—has suffered may be determined by comparison with the surrounding samples of identical size.

The equipment used in the improved method is being retained at the Riverbank laboratories, where it will be used on a continuing basis for determination of flame resistance of samples submitted by member companies of the Acoustical Materials Association.

The work of designing and assembling the automatic operating and recording equipment was carried on by Ramer, John J. Ahern, professor and director of fire protection and safety engineering at Illinois Tech, and C. E. Gottschalk, superintendent of the Foundation's plant facilities.

Electric Shovel Eliminates Hazards in Sawmill Fuel House

AN ELECTRICALLY driven half-yard shovel is one of the latest safety and labor-saving devices to be put into use at Weyerhaeuser Timber company's manufacturing center at Longview, Washington. The electric shovel breaks down

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(For further details, use the Reader's Inquiry Card on page 77)

piles of sawdust and hogged wood stored in a high-vaulted (38-foot-high) fuel house serving the furnaces in the company's sawmill power plant.

Before the shovel was installed in the fuel storage house, huge mounds of sawdust and hogged wood—often 30 feet high—were broken down with hand labor. Men armed with five-tined manure forks had to jab and rake at the fuel to keep it flowing steadily into power house conveyors.

These men, called diggers, had a tough job. The big mounds of sawdust and hogged wood packed hard under their own weight. Sometimes, the diggers had to use iron bars to pry loose the fuel in heavy chunks. This was hard on muscles, almost as hard on nerves.

A fuel digger working on the side of a fuel pile could start a sudden cave-in. Heavy chunks of caked fuel or an avalanche of loose sawdust, sliding down from a 30-foot-high mound, could bury a digger or push him into one of the conveyors on the fuel house floor.

The electrically powered shovel now used at the Weyerhaeuser plant has eliminated these hazards. To break down a fuel pile, the digger now climbs into the cab of the shovel and lets the machine do the work. With the protection of the shovel cab around him, he can't be touched by sudden cave-ins or tumbling chunks of hard-packed sawdust and hogged wood.

Weyerhaeuser purchased the half-yard shovel specially equipped for the fuel house job. A 30-horsepower electric motor replaced the standard diesel or gasoline engine, which could not be used in the fuel house because of fire and fume hazards.

Company machinists further adapted the unit for breaking down fuel piles by fitting a steel fork to the shovel boom.

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Tire Production

(From page 35) calender rollers at a rate of 60 yards per minute. The rollers deposit a layer of rubber on both sides of the fabric. The rubber permeates between the cords, and the result is a ply of rubber with a fabric mesh core.

After emerging from the calendering operation, the rubberized fabric is introduced into a dip tank containing a mixture of highly flammable liquid composed of approximately 95% naphtha, or similar solvent, and 5% solids. The dip tank measures 2' x 6' x 14". The solution in the dip tank, known as "cement," acts as the adhesive agent later when many layers of plies are bonded together to form the material from which tires are made.

As the web emerges from the dip tank it passes over scraper bars which remove excess cement and provide a smooth uniform coating. It is then passed into a drying tower where air at 150 degrees F. is circulated about the ply. The tower consists of two parallel vertical baffled chambers in a common insulated enclosure shaped like an inverted "U." The tower measures 4' 6" wide, 4' 8" deep and 17' 6" high. The heated air is supplied by a fan-type system blowing across steam heated coils.

As the dried coated fabric emerges from the base of the drying tower it is passed over five cooling rollers before moving along to the next processing stage. Use of volatile solvents in the dip tank process poses a serious fire hazard. In addition, the accumulation and concentration of explosive mixtures presents an equally dangerous situation.

Spark Suppression

The elements that could touch off a fire or explosion have been minimized to the greatest possible degree. All mechanical equipment including fans, rollers, and dip tank elevating mechanism, is of non-sparking construction and completely grounded. Moving parts such as drums have static collectors.

A further safety measure is provided to reduce the hazard of static sparking. Humidity throughout the system is maintained at 50% relative. This is accomplished by the introduction of steam in the supply of air, and control is maintained by a suitable wet and dry bulb controller. As static discharges are reduced in a humidified atmosphere, the combination of static collectors and humidity controls provides maximum protection.

Ventilation Equipment

Ventilation of the system to draw off toxic fumes is highly important. The dip tank has a ventilated enclosure separate from the actual dry-off tower. Due to the fact that the solvent vapors are approximately four times as heavy as air, the exhaust is taken from the lowest possible point. The dip tank with its separate enclosure has an exhaust collector duct around the base to take advantage of the natural tendency of the vapors to settle. The design of the enclosure surrounding the dip tank is such that air at relatively high velocity is pulled in through the fabric slots and also through any other openings. The enclosure surrounding the dip tank is arranged so that cover sections can be removed for threading the material and servicing idler rolls, scrapers and other elements. Continuous passage of air through the drying tower and automatic exhaust prohibits accumulations of vapors there.

Additional protection is provided by the interlocking of ventilation fans with the calender. Should fan failure occur because of mechanical or electrical difficulties, the calender immediately stops. Before the calender can again be started, a time delay is provided to compel a definite purging period in the dip unit

and tower. Further, the time delay is connected in series with the fan circuit and also to flow switches in the exhaust duct so that all fans must be in operation and air must be in motion through the exhaust system before the purging period starts. If for any reason air does not pass through the exhaust duct, it will be impossible to start the calender. Only when the ventilating equipment has been returned to operation and the purging period completed, will it be possible to start the calender.

Fire Control Equipment

Even with these elaborate safeguards, Industrial Ovens felt that an automatic fire extinguishing system must be installed in order to provide for the possibility of fire originating from external or unforeseen sources. Collaborating with fire engineers, Industrial Ovens developed a system which employs carbon dioxide, and which will extinguish immediately any fire in the machinery, will not damage the equipment or work in process, and will leave no mess to be cleaned up following a fire.

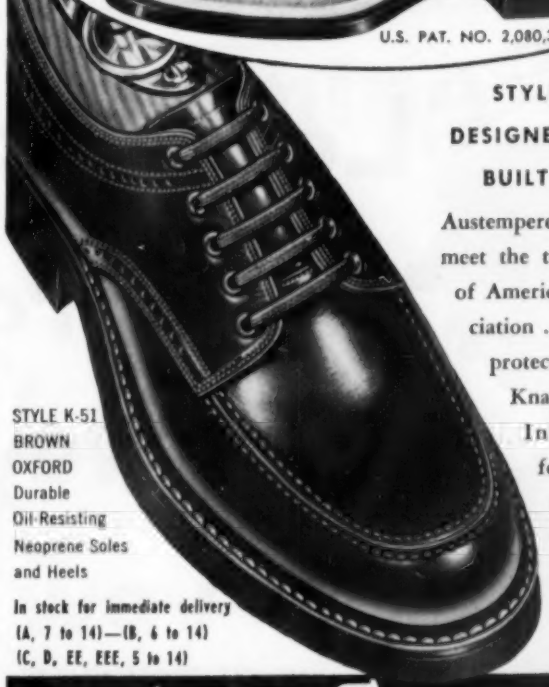
Carbon dioxide is supplied from four 50-pound cylinders rigged in tandem. Manual release of the cylinders is accomplished from a pull box adjacent to the equipment. However, the system is actuated automatically by a sudden rate-of-temperature-rise by means of heat sensitive detectors located at strategic points around the equipment. A sudden temperature increase causes the detectors to trip the carbon dioxide cylinders and the gas, under its own pressure, rushes through piping and is discharged from multiple-jet nozzles into the enclosed oven work space and along the path of material travel. By excluding oxygen, the carbon dioxide extinguishes the fire almost immediately. Release of gas causes the equipment to stop, turns off ventilation, and sounds a warning alarm.

The operator of the equipment also has at his disposal an analyzing unit giving a continuous record of the concentrations of explosive mixtures and vapors at multiple points throughout the drying system. Explosive vapors and gas samples are thermally apprised for explosive content and the results continuously recorded for absolute operational evidence. The unit is interlocked into the system and is equipped with audible and visible danger indicators, together with automatic shutdown in case the explosive vapors run higher than the limit.

While these elaborate safeguards, analyzers, and extinguishing systems add approximately 15% to the total cost of the equipment, if they prevent or extinguish even one fire, their cost will have been paid in full. Most important of all, they protect employees working in the area against injury or possibly even death as a result of fire.

Pictures by courtesy of Walter Kidde & Co.

SAFETY with COMFORT



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(For further details, use the Reader's Inquiry Card on page 77)

Learning the hard way

LINGERING VAPORS

GASOLINE vapors fade away—but slowly! A maintenance mechanic received first and second degree burns when a gasoline tank exploded while he was soldering it with a brazing torch. The tank had been washed out with water, but the employee failed to realize that water will not remove all the residue nor clean out rust, corrosion pits or pores in the metal. When the water is removed and heat applied, vapors will accumulate rapidly and reach explosives limits within seconds. Gasoline drums that have been empty for months have exploded when cutting torches are applied. In this case the tank was old and obsolete and should have been discarded. If thorough cleaning is impossible, fuel tanks should be filled with water or an inert gas before heat is applied.

NO REPEAL OF LAW OF GRAVITY

IN USING a stepladder, a painter failed to notice a crack in one of the supporting legs. As he leaned over the top of the ladder, the leg crumpled and the painter was thrown to the ground. The jagged end of the upright ripped through his shirt, emerged through the open collar and inflicted a serious laceration behind his ear. Ladders of all types should be carefully inspected before use. If defects are found, the ladders should be tagged and removed from further use until suitably repaired.

WASTE FROM WASTE

KEROSENE, which was used as a cutting oil for drilling aluminum castings, was improperly stored in small open cans behind the drill press. In addition, the floor was heavily oil-soaked. The machinist, preparing for the week-end shut down, cleaned his drill press with kerosene-soaked waste, tossing the material in back of the machine instead of depositing it in covered metal cans which were provided. Hours later the kerosene-saturated waste became ignited through spontaneous combustion. The resulting fire so filled the room with dense smoke that the watchman was unable to reach a board containing all types of extinguishers, located less than twenty feet from the seat of the flames.

MACHINE TOOL FIRE

A TURRET lathe operator was machining a bar of magnesium, using a water-oil emulsion as a coolant instead of mineral seal oil or lard oil. Chips from the machining operation became overheated and fire flashed in the lathe's chip collecting pan. Woodwork was charred throughout the shop and water, from two sprinklers, damaged some paper stock in the basement. Quick removal of other materials from the fire area prevented further damage. Extra care must be exercised in handling magnesium when it is in chips or a finely divided form. There are also special extinguishers for putting out fires in burning metals.

BY WAY OF CONTRAST

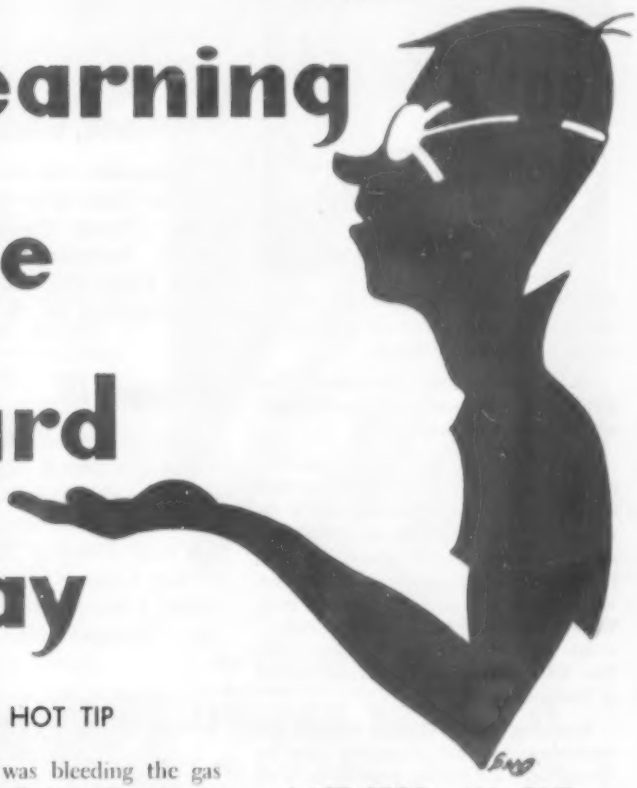
HOW that attention to the use and maintenance of protective equipment is vital in the prevention of both accident and production losses is shown in two recent fires involving paper machines. In one, an overheated bearing on a paper machine drier roll caused a fire which flashed across lint accumulation and ignited the paper. The fire was easily controlled by sprinklers under the hood and in the broke pit.

At another mill, the hood on the paper machine had been changed but the sprinklers were not reconnected. Once again, a hot bearing ignited accumulations under the hood. Before the fire department was able to extinguish the blaze, several thousand dollars worth of damage resulted.

SPARKS FLY DOWNWARD

HERE is another in the long list of losses caused by careless welding and cutting procedures. This time, sparks from welding operations in a machine shop dropped through a small hole in the floor to the basement. Some oily rags and paper became ignited and the flames spread to oil-soaked wooden shelves. The fire squad was unable to attack the fire at close range because of the dense smoke. When the floor sagged, oil spilled from the tipped machines to add to the blaze. Much of the building, tools and equipment was ruined before the fire was extinguished. Here is one more example of the need for a careful survey of the area before welding is begun. Also, what were those oily rags and paper doing in the basement, except waiting to be ignited?

Learning the hard way



A HOT TIP

A CREW was bleeding the gas pressure off the well casing in preparation for working over the well and the end of the bleeder pipe was located so that the gas was being blown directly across the path leading to the water barrel. After getting a drink of water an employee was walking through the gas stream when he decided to have a cigarette. A fellow worker saw this and shouted a warning that was unheard because of the noise from the escaping gas. The cigarette never did get lit, but the gas was ignited and the careless smoker was hospitalized with severe burns. Proper signs and warnings might have prevented this accident.

LAST STOP—ALL OUT

AFTER completing their day's work for a city park department three workmen were riding home in a dump truck. Without warning the dumping mechanism began to operate, throwing the three to the street. As the men were thrown to the ground, the tail-piece swung back striking one of the men in the head causing fatal injuries to him and resulting in injuries requiring hospitalization for the other two men. Riding in the bed of dump trucks is a common practice and should be prohibited because of the many hazards associated with it.

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THE Future SHOWS

York Harbor, Me.

September 11–12. Twenty-fifth Annual Maine State Safety Conference (Marshall House). A. F. Minchin, secretary, Industrial Safety Div., Dept. of Labor & Industry.

Cleveland, Ohio

September 16–18. Fourteenth Annual Ohio State Safety Conference. (Hotel Carter). Carl L. Smith, Secretary-Treasurer, Ohio State Safety Council, 2073 E. 9th St., Cleveland 15, Ohio.

Chicago, Ill.

Oct. 20–24. Fortieth National Safety Congress & Exposition. (Industrial safety sessions at Conrad Hilton, Congress, etc. Hotels, Traffic safety at Congress Hotel.) R. L. Forney, General Secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Cleveland, Ohio

October 20–24. Eightieth Annual Meeting of the American Public Health Association, (Public Auditorium). Dr. Reginald M. Atwater, Executive Secretary, American Public Health Association, 1790 Broadway, New York, N. Y.

Houston, Texas

October 27–31. Combined meeting of the National Rural Electric Job Training & Safety Congress, and the Texas Job Training & Safety Training Program for Rural Electric Cooperatives, (Shamrock Hotel). W. W. Mills, chairman, National Planning Committee, F. E. 236, College Station, Texas.

Cincinnati, Ohio

November 12–13. Second Annual Greater Cincinnati Safety Conference & Exhibit. (Gibson Hotel) Kenneth R. Miller, Coordinator, c/o Greater Cincinnati Safety Council, 1203 Federal Reserve Bank Bldg., Cincinnati 2, Ohio.

Cleveland, Ohio

January 19–22. Fourth Annual Plant Maintenance Show & Conference, (Public Auditorium). Clapp & Poliak, Inc., exposition managers, 341 Madison Ave., New York 17, N. Y.

Safety's Big Birthday Party

THE huge luxury liner "Titanic" struck an iceberg and sank with huge loss of life in 1912. Jim Thorpe swept the Olympic games that same year and was acclaimed the world's greatest athlete.

At the same time a big fuss was made in magazines, papers and sermons over the fact that women had been seen smoking in public. Another rumpus was raised over the way kids were dancing the Turkey Trot. And Theodore Roosevelt led his Bull Moosers out of the GOP convention to form a third party.

In among all this big news another item sneaked into the press in 1912, twelve years after this magazine was founded. Some people were holding a safety convention in Milwaukee—the First Cooperative Safety Congress. Naturally, this news story was lost among the more spectacular happenings.

But out of that modest, inconspicuous safety meeting in Milwaukee came the National Safety Council and the far-flung organized

(For further details on advertised products, use the Reader's Inquiry Card on page 77)

safety movement which today, 40 years later, reaches into every state and scores of countries.

The National Safety Council will celebrate the 40th anniversary of that Milwaukee safety meeting in a big way when the 40th annual Congress is held in Chicago on October 20–24.

The Congress this fall won't bear much resemblance to that first Congress in 1912. This year more than 12,000 people from all over the world will come to Chicago for the world's biggest safety event. Five huge hotels will be needed to house the meetings, while 600 speakers will appear at more than 200 sessions, covering every phase of safety. In addition, the Congress exposition will contain about 250 exhibits covering all types of safety aids, to be shown at the Hilton, while traffic safety meetings will be held at the Congress Hotel.

Cooperative Effort

This Congress will be dedicated to celebrating and commemorating four decades of safety. It will emphasize the cooperative nature of the safety movement, in which scores of safety organizations pool their efforts and resources in a combined fight against accidents.

In the 40 years since that first safety convention was held, 500,000 lives have been saved. This figure is based on the accidental death rate in 1913 and in succeeding years. But safety leaders point out that the toll still is so huge it staggers the imagination—94,000 killed and 9,400,000 injured in 1951 alone, at a cost of $7,900,000,000.

Out of the 1952 Congress, the Council hopes, will come the ammunition and weapons to wage a harder and even more successful war on accidents. But throughout the entire convention will run a tone of gratitude to those safety pioneers who attended the first Congress in 1912. Efforts are being made to have as many as possible attend the 40th annual Congress as honor guests of the National Safety Council.

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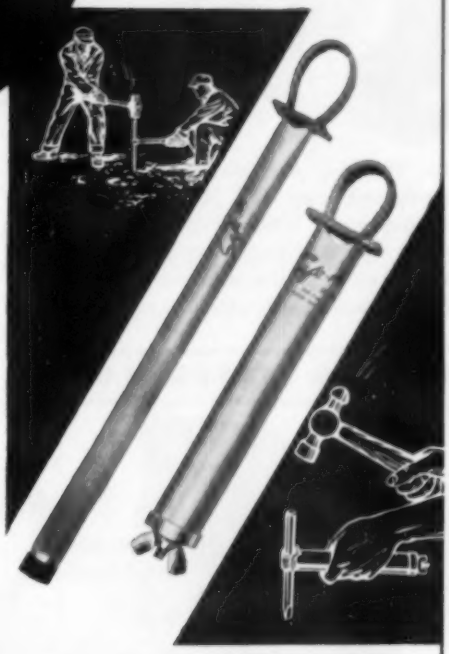

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TOUGH STEEL HANDLE for rough treatment. Keeps holder's hands well away from danger.

18" model
Use for large sledge-driven tools ...Holds tools up to 2¾" dia.

6" model
When one man both holds and hammers...Holds tools up to 1¼" dia.

PREVENT
• Smashed fingers
• Flying chisels

See your safety dealer or write

SPECIFY Safe-Hi PRODUCTS

ROSE MFG. CO.
733 Club Bldg., Denver, Colo.
• SAFETY BELTS • LADDER SHOES
• POLE GRIPS • WALL GRIPS • CHISEL GRIPS
• LIFELINES & LANYARDS

(For further details, use the Reader's Inquiry Card on page 77)

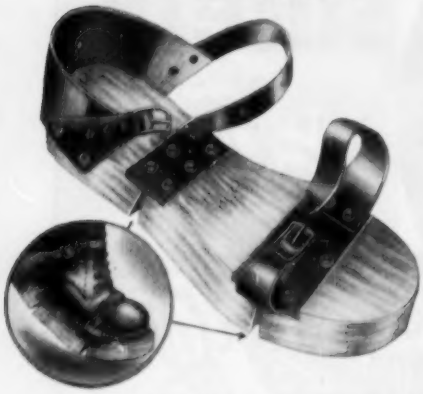
Materials Handling Show

THE importance to top management of scientific protective packaging and materials handling as profit-making functions will be emphasized at the seventh annual Industrial Packaging and Materials Handling Exposition in Chicago's Coliseum next Oct. 14, 15, and 16.

"Making Profits through Packaging and Materials Handling" will be the theme of the exposition. It will be dramatized in the unique annual Protective Packaging and Materials Handling Competition, whose prize ribbons are much coveted by professional packaging and materials handling engineers. It also will underlie the curriculum for the now famous annual "short course in packaging and materials handling," which will be conducted Oct. 13, 14, 15, and 16 under the sponsorship of the College of Engineering, Depart-

AN IMPROVED REECE

"Hot Foot Sandal"



No. 351—For hot steel. Straps on quickly over any shoe. Heat proof—puncture proof. One inch thick seasoned wood. Two strong sole leather hinges. Sturdy leather counter-adjustable leather straps. Sizes—Small—Medium—Large.

STRONG STEEL TOE

No. 504-S—Reece All-Purpose Shoe with durable leather uppers, steel toe, Reece "PERFECT ROCKER" Wooden Sole. Safe, reliable, dependable for factories, platers, oil refineries, foundries, steel mills. Also other styles.
Sizes—5–13. No half sizes.

Write for
COMPLETE CATALOG

REECE

WOODEN SOLE SHOE CO.

There is no substitute for Reece Wooden soles

SM & P 9 **COLUMBUS, NEBRASKA**

ment of Mechanical Engineering, University of Illinois-Extension Division, at its "campus" at the Coliseum.

The Industrial Packaging and Materials Handling Exposition and concurrent competition are sponsored annually by the Society of Industrial Packaging and Materials Handling Engineers (SIPMHE), whose membership includes many hundreds of the top packaging and materials handling executives of the country's leading industries.

"The Engineer's Role in Cost Reduction" will be the subject of a talk by Dr. William L. Everitt, Dean of the U. of I. College of Engineering, at the opening of the short course. The same subject will be strongly emphasized by nearly all the entries in the competition. Economy, or cost reduction, will be an important factor in judging the winners. Cost reduction also will be stressed by most of the scores of exhibits at the exposition.

Nuclear Safety Course

A TWO-WEEK special course covering all aspects of radiological safety will be conducted in the fall by the New York University Post-Graduate Medical School in cooperation with The United States Atomic Energy Commission.

The course, which will begin October 20, is designed to acquaint industrial hygienists, insurance engineers, state, federal, county and city health officials, industrial and research institution safety engineers, industrial physicians, and present and potential users of radioisotopes and X-ray equipment with the fundamentals of radiation safety. It will be given at the Institute of Industrial Medicine of the Post-Graduate Medical School.

In announcing the course, Dr. A. J. Lanza, director of the institute, said, "It will be the most complete presentation on radiological safety ever offered by an academic institution.

"With the greatly increased use of radioisotopes—by products of the atomic pile—in industry and in all phases of medical and industrial research, there is great need for intelligent understanding on the part of those responsible for safeguarding employees and the public of the basic do's and don't's of radiological safety and the scientific reasons for these precautions. This course, which will be given by nationally recognized experts, will do just that," he said.

Vision Conference

RUTGERS University will hold its Second Annual Conference on Occupational Vision at Atlantic City, November 13 and 14, in cooperation with two New Jersey State departments and five professional organizations.

The conference will continue to promote conservation of vision, protection of eyes against injury, and the values of increased efficiency, health and welfare of industrial workers through occupational vision programs.

This second conference will make practical applications of its forums and discussions in an extensive series of educational displays. These displays will feature testing procedures, visual conservation practices, eye safety methods, and ways of improving environmental factors for visual efficiency.

The part of the exhibit devoted to tests will include examples of flow charts and actual plant testing equipment. The display of occupational vision examples will include charts and graphs used by the New Jersey Optometric Association, the Army and Navy, National Society for the Prevention of Blindness, and Better Vision Institute. Examples of various optical devices used in aiding and protecting vision in industry will be demonstrated as well as modern environmental aids to seeing.

The conference program will feature five forums on visual efficiency and production, eye safety, conser-

(For further details on advertised products, use the Reader's Inquiry Card on page 77)

vation of vision, aids to better seeing, and the economic aspects of occupational vision programs. Some 18 experts in these fields will participate in the five forums.

Dr. Charles F. McCuen, Vice-President of GM and General Manager of Research Laboratories, General Motors Corporation, will be the featured banquet speaker.

Co-operating with the State University of New Jersey in sponsoring this Occupational Vision Conference will be the Illuminating Engineering Society, National Society for the Prevention of Blindness, New Jersey State Department of Health, New Jersey State Department of Labor and Industry, New Jersey Optometric Association, New Jersey State Safety Council, and New Jersey Society of Professional Engineers.

SAFETY ACHIEVEMENTS

Independent Milwaukee Safety Record Honored

INDEPENDENT Milwaukee Brewery has been honored for compiling a full year without a single lost-time accident.

From June 5, 1951, through June 4, 1952, Independent, averaging 162 employees, accumulated a total of 314,315 man-hours free of mishaps. The record is still continuing.

The record was recognized at a luncheon of the Milwaukee Brewers' Safety Committee, which is composed of safety men from all Milwaukee breweries.

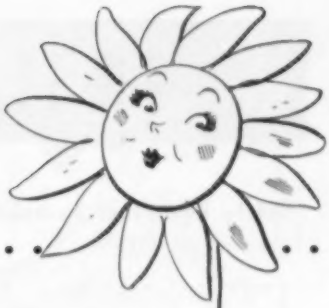
Acme Steel Award

ACME Steel Company's Archer Chicago plant received their third consecutive first-place safety award for industrial injury prevention, at the 29th Annual Midwest Safety Show in the Congress Hotel, Chicago.

Awards were based upon lowered accident frequency and severity rates in 1951 over 1950 performance. The Archer Plant, winner of eleven awards in eighteen contests as well as five national awards, lowered its severity rate from .03 days lost per thousand hours worked in 1950 to .002 last year. The frequency rate hours worked was reduced to 1.17 last year.

F. Roy Hyde, plant superintendent, and Joseph Spix, safety engineer, placed full credit for the outstanding record in the hands of plant workers. "Spearheaded by the safety committee, our accident prevention program is conducted through regular meetings, films, posters, and slogan contests," Mr. Hyde explained. "We try to see that every man in our plant wears safety shoes, practices good housekeeping and is safety minded."

BE FRESH... STAY FRESH



wear a
Dupor No. 40
The Respirator That is U.S.B. of M. Approved for Type A Dusts

Guards against pneumoconiosis and silicosis producing dusts. Has over 40 sq. in. twin filter area. Sanitary face cloth. Soft rubber face mask. "Controlled breathing" valves. Wearer has a panorama view with no blind spots. Unusual rubber, felt and plastic construction makes it extra durable, no denting or bending possible. Efficiency remains unimpaired even after rough treatment.

Sample sent $3.00 pp

wear a
Dupor No. 4
The Respirator For Dust, Fumes, Paint Spray

Double filters provide easy breathing. Soft rubber face mask gives air-tight fit. Sanitary face cloth protects against dermatitis or chafing. Has patented DUPOR valves for "controlled breathing," and panorama view without blind spots. A prime favorite for years!

Sample sent $2.00 pp

For the best in eye protection get H. S. Cover's Gas-Tight, Fog-Proof Goggles.. $2.00 pp

H. S. COVER, South Bend, Ind.
(For further details, use the Reader's Inquiry Card on page 77)

INSIDE THE TRADE

Safety Equipment Association Elects

THE Industrial Safety Equipment Association held their annual meeting on June 25, 26 and 27 at the Homestead, Hot Springs, Va., and elected as president Edison L. Wheeler, of Wheeler Protective Apparel Company.

Elected also at the meeting were S. C. Herbine, Willson Products Company, Vice-President; J. B. Davies, Mine Safety Appliances Company and F. R. Davis, Jr., Davis Emergency Equipment Company, trustees.

J. A. Brewer, Industrial Gloves Company and G. M. Glidden, Acme Protection Equipment Company carry over as members of the Board while Charles H. Gallaway, American Optical Company, ISEA president for the past two years, continues as a member of the Board for another year. In addition, Mr. Gallaway has been elected to the Board of Directors of the nation's National Safety Council. In this capacity he will serve as liaison between the ISEA and the Council.

The ISEA is composed of a group of manufacturers whose express purpose is to exchange ideas which ultimately benefit users of industrial safety equipment in addition to solving problems of common interest of the industry.

The association is divided into product groups representing all types of industrial safety equipment. Specific problems of industry may be directed to the ISEA, 420 Lexington Avenue, New York 17, New York.

SOMETHING NEW in SAFETY AWARDS

Playing cards with a "Green Cross for Safety" emblem or your safety message on each card. Ideal as award for 1 year "No Accidents"—gifts for the Safety Committee—standard equipment for recreation room.

Single Decks—85c ea.
Double Decks—$1.70 ea.

Prices of 50 decks or more, printed as desired, upon request.

See our Booth No. 48
National Safety Congress

Write for FREE Safety Awards Catalog

CLARENCE WILLIAMS
WILLIAMS JEWELRY & MFG. CO.
Silversmiths Bldg., 10 S. Wabash Ave.
Phone: CEntral 6-5018 Chicago 3, Ill.

Cunningham Co. Moves

THE M. E. Cunningham Company, manufacturer of Mecco Safety steel stamps, dies and other marking tools, has acquired a new plant in Pittsburgh. According to Frank Speicher, Sr., president, the new plant will have more than double the working space than was available in the South Side Pittsburgh site where the company had been located since 1928. Cunningham's products feature a special alloy steel developed for use in marking tools because of its ability to resist dangerous spalling and mushrooming.

Paulsen-Webber Expands

COMPLETION of an expansion program launched early in 1951 which has tripled the company's wire rope production and brought current sales to an all-time peak was announced recently by Fredrik B. Paulsen, president of the Paulsen-Webber Cordage Corporation.

Large orders for the manufacture and fabrication of wire rope for harbor defense anti-submarine nets resulting in the acquisition of new manufacturing facilities at 32 Hamilton Avenue, Brooklyn, which have since been virtually rebuilt and equipped with the newest equipment in the industry.

Moves intended to consolidate the company's position as well as to further its expansion program, Paulsen said, included purchase of its headquarters building at 170 John Street and additional adjoining property; acquisition of a five-story and basement building in Water Street for fabrication and storage of harbor defense net components; additional fabricating and warehouse facilities in Baltimore, and expanded office and warehouse space in Boston and New Orleans. New sales offices were opened during the year in New Orleans, Pittsburgh, Nashville, Charlotte, N. C., and Los Angeles.

Changes at Blaw-Knox

BLAW-KNOX Company has announced that its Power Piping and Sprinkler Divisions have been combined and Duncan A. Black has been named manager of the newly combined division.

Mr. Black joined the Power Piping Company in 1926 as a piping engineer and continued with the organization when it became part of Blaw-Knox in 1937. Since the beginning of 1949 he has been vice president of the Blaw-Knox Construction Company, a subsidiary, and assistant manager of the Power Piping Division. A native of Pittsburgh, Mr. Black was educated at Allegheny High School and Carnegie Institute of Technology.

Pittsburgh Glass Appoints

APPOINTMENT of Dr. George S. Bachman as Director of Research for Pittsburgh Plate Glass

(For further details on advertised products, use the Reader's Inquiry Card on page 77)

Company's new Fiber Glass Division has been announced by J. Hervey Sherts, general manager of the division.

Dr. Bachman joined Pittsburgh Plate Glass Company during 1947 and since then has been associated with the glass division's research laboratories at Creighton, Pennsylvania. As Director of Research, his headquarters will be located at Shelbyville, Indiana, where production facilities and laboratories are being installed for the production of strand and super-fine Fiber Glass. Initial production from the plant is expected within the next few months.

Gustin-Bacon Office

GUSTIN-BACON Manufacturing Company, of Kansas City, Mo., announces the opening of a Detroit office that is devoted solely to serving the needs of the automotive industry. Gustin-Bacon is the producer of Ultralite glass fiber insulation and other acoustical and thermal insulation materials that have won wide acceptance in the automotive industry.

The new office will be located at 18323 James Couzens Highway, and will be in charge of Walter F. Skinner, who recently resigned as Vice President and Director of Woodal Industries, Inc. Mr. Skinner has had more than 25 years experience in handling materials for automobile body treatment. Associated with him will be W. H. (Bud) Adams.

Pyrene Names Williams and Kemphert to Sales Posts

MR. S. C. WILLIAMS has been appointed General Field Sales Manager and Mr. Walter W. Kemphert, Mid-West District Manager of Pyrene Manufacturing Company, according to George H. Boucher, Vice President and General Manager.

Mr. Williams has served Pyrene as sales representative in Louisville, Kentucky, special assistant to the president at Newark, and district manager at Newark and Chicago. He will now be in charge of all field operations and district office personnel.

Mr. Kemphert joins Pyrene after serving in sales and merchandising positions with other industrial concerns. He has been active in association circles and has been vice president and treasurer of the American Supply and Machinery Manufacturers Association.

In addition to marketing the various types of approved fire extinguishers, air foam playpipes and systems made by Pyrene, these men will also sell the dry chemical and carbon dioxide extinguishers, extinguishing systems, fire and smoke detecting systems made by Pyrene's affiliate, C-O-Two Fire Equipment Company.

That's right, tools aren't needed to recharge an Ansul Dry Chemical Fire Extinguisher. Nor is it necessary to send the extinguisher away for recharging. After use, even the most inexperienced operator can quickly recharge an Ansul Dry Chemical Fire Extinguisher. This assures you of continuing fire protection.

Ansul Dry Chemical Fire Extinguishers are approved for Class "B" and Class "C" fires by the Underwriter's Laboratories Inc., Factory Mutual Laboratories, and the U. S. Coast Guard. Field experience has proved Ansul Extinguishers are your best protection for flammable liquid, gas and electrical fires.

SEE PAGE 13

Housekeeping

(From page 34) through the use of anti-slip floor coverings.

All sweeping should be either by vacuum or with the use of dust inhibiting sweeping compounds. In some cases, wet methods are practicable. In large buildings covering several floors, a central vacuum system with piped outlets at various locations is desirable. The largest expense in floor care is labor. For this reason, many companies have shown decided economies by mechanizing floor maintenance equipment.

Light Maintenance

The biggest offender in ruining illumination around plants is dust. It is important to design lighting for easy cleaning, as, in many instances, the cost of cleaning would exceed the cost of lamps. The cleaning and maintenance of lights should be on a definite schedule, as surveys have indicated that a light is normally giving only 50 per cent of its rated capacity because of lack of cleaning. Lighting experts indicate this cleaning should be done about every three months and a complete overhaul due yearly. A subsequent 90 per cent or

(Continued next page)

better rating capacity will result. The expression "water is cheaper than watts" will show that economies along with better housekeeping can result.

Sealed lamps are useful, but are not suitable for most permanent industrial lighting because of glare. Also, clusters of lamps are not economical and their equivalent in single units, well spaced, is better. It has also been found that local high intensity lighting around machines is inferior to a good general low intensity lay-out.

Much natural light is wasted unless windows are washed regularly. This washing is necessary both winter and summer. Natural illumination through windows and skylights is desirable because of its spectral quality, but on the other hand, it is extremely variable in quantity. The alternation of brilliant sunlight and dark, cloudy days, the seasonal variations in the length of daylight, various directional exposures, the placement of equipment and machinery are conditions that practically prohibit generalizations and rules for location, size, and type of windows. Modern construction usually provides as many windows as possible, but even then, artificial illumination must be added to provide satisfactory lighting conditions.

Inadequate lighting slows down the worker because, if he cannot see the work clearly, he can't do it as well. In addition, poor lighting contributes to fatigue. A tired worker, whether it be physical or mental, is one of our prime accident producers.

Waste Disposal

A well planned waste collection and disposal system is a must for obtaining good housekeeping. Waste receptacles of a type which can be kept clean and sanitary should be placed convenient to workers and especially near all eating places. These containers should be of the covered type for combustible waste or for waste that will attract insects. All waste should be collected routinely, perhaps daily, and disposed of in a manner suitable to health departments.

On any efficient housekeeping program, someone has to be boss. There should be a central authority to receive and act on housekeeping activities. The foreman of each department should be in direct charge of his housekeeping. However, he will need help to carry out his program. The foreman must instill in his men that housekeeping is a part of their job, but a regular inspection program is needed by a central authority to evaluate their efforts.

A system used at many plants consists of a two- or three-man committee that has the authority to inspect any department at any time. This committee should include a well experienced operating man, and an engineer along with a person that is adept at taking pictures. It is surprising how effective a camera can be to improve and maintain housekeeping. A few examples of before and after conditions are shown in the pictures that accompany this article.

Any company desiring to maintain any kind of a safety record will find it necessary to declare a continual war on "poor housekeeping." Good housekeeping cannot be attained by an occasional grand clean-up. It must be planned for and always pushed. The results will be the elimination of accident and fire hazards; the conservation of space, time, material and effort and the improvement of employee morale.

From an address presented at the 13th Annual Southern Safety Conference.
Pictures by courtesy of Tennessee Coal & Iron Div., U. S. Steel Co.

For Safety
Guardi-Ann Hat
U.S. PATENT NO. 1,820,795

Combines utmost protection and style. Exclusive patented features found in no other hat.

Write for Free Sample or Order Direct from us

$15.00 dz.

CHIC MAID HAT MFG. CO., Inc.
630 HIGH STREET
BUFFALO 11, N. Y.

THE SURTY MFG CO: INC. 4139 W. KINZIE ST. CHICAGO 24

FOUNDED for SAVING LIFE, LIMB and SIGHT by

(1) Providing Safety for Machines, Point of Operation Lighting, First Aid and Magnifiers also Eliminating Dust Conditions.

(2) Securing cooperation of Worker in using Safety Guards

(3) Placing a complete SAFETY program under a MONEY BACK guarantee of increased output, sufficient to cover the cost annually.

NATIONAL SERVICE

IS AVAILABLE ON COMPLETE OR PARTIAL JOBS, THE ORDINARY OR UNUSUAL, BECAUSE OF OUR 40 YEARS EXPERIENCE.

NS

(For further details on advertised products, use the Reader's Inquiry Card on page 77)

The Built-In System

(From page 20) is one that is installed to handle more than the foreseeable peak "load" of the moment. It should, in other words, anticipate expansion in manufacturing processes or extra demands that might be placed upon it by hazards

of new materials.

Properly planned and engineered, properly installed by a progressive, responsible manufacturer of fire protection equipment, your chemical fire extinguishing system can be as definite an asset to your business as cash in the bank.

More than that, chemical extinguishing systems can save the nation millions of dollars a year and an impressive number of man-hours. This should be welcome news to the average businessman who must operate without interruption to show a profit!

Pictures by courtesy of C-O-Two Fire Equipment Co.

Paper Work

(From page 16) see that it is in working order, of all valves in the sprinkler systems, alarms and indicators. The fire equipment inspection checks whether the dry chemical tanks are filled, whether the hose is open, whether the nozzle is working properly, whether the valve is sealed with a wire seal, whether the unit is clear of obstruction and ready for instant use. Immediately after every fire, the fire extinguishers that have been used are filled by the fire brigade chief and double-checked and sealed with a lead wire seal by the fire chief. The latter also makes a daily check of the wire seals.

Custin Bacon Manufacturing Company — Inspector Frank Creighton

INSPECTION REPORT OF PLANT PROTECTION EQUIPMENT

Plant Number 5 — Date March 1, 1952

SPRINKLER SYSTEMS (Valve Numbers 1-2-3-4-5-6 & 7):

Valves clear for instant use 1-2-3-4-5-6 & 7 — Obstructed None

Control valve found sealed 1-2-3-5-6 & 7 — Not Sealed No. 4

Alarm valves found open 1-2-3-4-5-6 & 7 — Closed None

Pressure gauges registering 1-2-3-4-5-6 & 7 — Not registering None

Alarms tested and working 1-2-3-4-5-6 & 7 — Not working None

Dry system control valve found open Yes — Closed No

Dry system control valve found sealed Yes — Not sealed No

Air pressure reading found on pressure gauge 150

Post indicator valves (outside building) found open Yes — Closed None

(Unlock and test these valves, oil and replace locks)

Remarks: Control Valve No. 4 was re-sealed on this inspection.

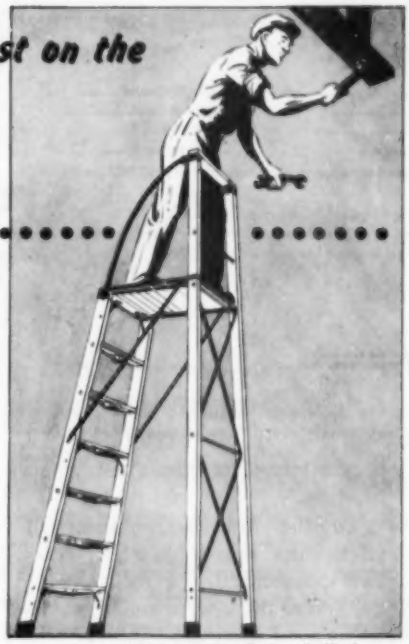
FIRE HOSE RACKS (must be clear of obstructions so that they are ready for instant use. Racks should have cocks, hose nozzles in place, all in proper connected and in closed position. If hose station fails to meet these requirements on this inspection please list station number and explain.

All Hose Stations meet with above conditions.

Form #R-1 (shown above) is used for the monthly inspection of sprinkler equipment. A similar form (R-2) reports on the condition of hand and wheeled extinguishers.

high jobs go fast on the

safety level.....



Dayton's special "Safety Level" working platform gives workman complete confidence. He works faster, more efficiently, uses both hands. Check the "big 6" features that make Dayton your best buy.

1. Rail-guarded "Safety Level" platform.
2. Locks in place automatically.
3. Rubber safety shoes.
4. Light weight—great strength.
5. Economically priced.
6. Complete size range 3' to 16' in height.

Write Dept. G for Bulletin

Dayton safety ladders

Dayton safety ladder co.
2339 Gilbert Ave., Cincinnati, Ohio

In Canada: Safety Supply Co., Toronto

(For details use the Reader's Inquiry Card on page 77)

Follow-Up System

One of the most novel, and effective forms in use at Gustin-Bacon is the Safetygram, developed by Beaver for the purpose of notifying personnel of hazards or conditions that must be corrected. The Safetygrams are numbered consecutively, and copies are sent to all personnel involved in correcting a condition which Beaver may discover on an inspection tour. Beaver keeps them in his "active" file until the complaint is corrected. Then, it is transferred to his "completed" file and maintained for a permanent record.

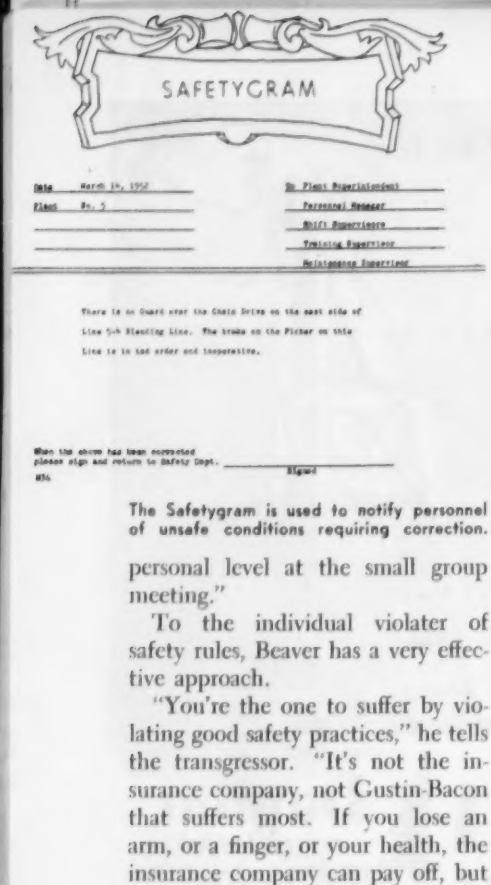
To help the Safety Director keep track of the specific safety training that has been given to an individual, the Personnel Department keeps forms that list the course of training and who attended. Also indicated is the time spent on the course, the date of training, and employee's name. This enables the Safety Director to avoid giving the same lectures to the same employees unknowingly.

Like many other companies, Gustin-Bacon encourages employee suggestions. It has a regular form for this, too, each suggestion being reviewed by the Suggestion Award Committee. Cash awards are given for suggestions, the amount of the award depending on the value of the suggestion.

The committee, for instance, made a $15 award to an employee for suggesting a safety hook on a hoist. Another award for $10 went to an employee for suggesting that flood lights be installed on the roof so that the fire hose boxes could be seen more easily.

To teach safety most effectively, Beaver finds it best to lecture to small groups.

"I'd rather hold four or five meetings with only 12 men present, than one large meeting with 50 present. You can reach the men on a very



SAFETYGRAM

Date March 14, 1952
Plant No. 5

To Plant Superintendent
Personnel Manager
Shift Supervisors
Training Supervisor
Maintenance Supervisor

There is no Guard over the Chain Drive on the east side of Line 5-A Blanking Line. The brake on the Picker on this Line is in bad order and inoperative.

When the above has been corrected please sign and return to Safety Dept.
Signed
ATA

The Safetygram is used to notify personnel of unsafe conditions requiring correction.

personal level at the small group meeting."

To the individual violater of safety rules, Beaver has a very effective approach.

"You're the one to suffer by violating good safety practices," he tells the transgressor. "It's not the insurance company, not Gustin-Bacon that suffers most. If you lose an arm, or a finger, or your health, the insurance company can pay off, but it's no great loss to them. It's you who'll suffer."

Beaver organized what he calls his Safety Committee System in November 1950. This calls for complete rotation of committee members after serving approximately six weeks. Each work shift is represented by four men. Meetings are held with the Safety Director at least once a week, at which time suggestions are discussed and general instruction provided.

There are a number of other types of safety meetings. One of these is a monthly session among plant management, plant supervisors and the Safety Director, to discuss and follow up action taken on Beaver's Safetygrams. This meeting is usually conducted by the plant manager.

Meetings are also held in groups of 10 and 25 for all plant personnel. These are conducted by the Safety Director, for the purpose of discussing the safety program, introducing new equipment, and instructing personnel in the proper use of such equipment.

Other meetings are held in groups of 10 to 25 for the purpose of showing sound motion pictures on safety. These films are usually followed by a question and answer period.

Each employee of every plant receives instruction in the actual use of first aid, fire extinguishers, fire hoses, gas masks, and other personal protective equipment. This instruction is given on the fire training grounds adjacent to the Fairfax plant. Employees are given this training in groups of 6 to 12, three or four times a year.

Gustin-Bacon thus makes the proud boast that every employee is a fireman.

From the fire classes are selected members of the plant's fire brigade. This consists of ten men from each shift, who are thoroughly trained in every phase of fire prevention and fire fighting. The men are chosen from all departments, with preference going to those who can leave their jobs at a moment's notice.

One of several hose stations located on roof of Gustin-Bacon Mfg. Co. in Kansas City, Mo. These hinged boxes are insulated and have open slat bottoms with openings through the roof into the building. Flood lights on roof illuminate them at night to mark locations and prevent confusion.

The main plant is protected by seven main sprinkler valves, each valve controlling a section or zone. Each zone is numbered from one to seven, and members of the fire brigade are expected to know what hazards are in each zone.

Gustin-Bacon's sprinkler system is connected with an electrically-controlled annunciator system. In case of a broken sprinkler head resulting from a fire or accident, an alarm is sounded, ringing a series of ten-inch gongs in all areas of the plant. Since the gongs code the area, fire brigade members know immediately where the sprinkler head is broken.

Also connected to the annunciator system are "break glass" or "call boxes" throughout the plant. If a fire is detected before the sprinkler head is broken, an alarm is spread by breaking the glass in one of the boxes. The coding bells give out the same signal as when a sprinkler head is broken, thus eliminating the necessity for getting to a telephone to turn in an alarm. Three or four times a year, a dry run is conducted to keep the Fire Brigade members on their toes and to check whether they know their zone numbers.

All in all, it's a very thorough safety program at Gustin-Bacon, and one which is paying off.

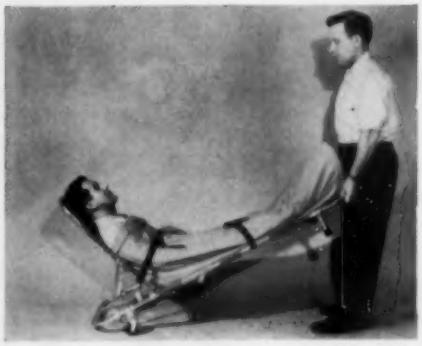
Pictures and forms by courtesy of Gustin-Bacon Mfg. Co.

EMERGENCY STRETCHERS

and all types of WHEELED COTS—FOR DEPT. STORE FIRST AID ROOMS, INDUSTRIAL PLANTS & CONSTRUCTION JOBS.

write for catalog showing all models.

WASHINGTON MORTUARY SUPPLY COMPANY
Box 105
Washington C. H., Ohio



(For details use the Reader's Inquiry Card on page 77)

industrial Hygiene

ASSOCIATE EDITOR
JACOB A. GOLDBERG, A.M., Ph.D.

Ammonium Dichromate Safety Sheet

INSTRUCTIONS for the safe handling and use of Ammonium Dichromate, which is widely used in the chemical and allied industries, are contained in Chemical Safety Data Sheet SD-45, issued recently by the Manufacturing Chemists' Association, Inc.

Important physical and chemical properties of ammonium dichromate are given for the information of personnel handling and using it. Classified by the Interstate Commerce Commission as a "Flammable Solid," ammonium dichromate will ignite if exposed to flames or sparks. At elevated temperatures it decomposes and may react explosively with certain organic substances. Essential information about hazards to be anticipated in shipping, storage, unloading and emptying containers is given in detail.

A section on health hazards and their control outlines first aid measures, personal protective equipment and precautions to be observed by workers who come in contact with the chemical. Unless employees are familiar with its properties, local irritation of mucous membranes and skin are possible, and harmful effects may be produced if swallowed or inhaled. The high coloring power of ammonium dichromate, red to orange, is a useful indicator in washing exposed skin or clothing. The absence of color indicates that the chemical has been completely removed.

Copies of Chemical Safety Data Sheet SD-45 may be ordered at 25 cents each from Manufacturing Chemists' Association, Inc., Woodward Building, 15th and H Streets, Washington 5, D. C. Remittance should accompany order.

Industrial Noise

ONE of the leading problems in industry at present is that associated with the effects of noise upon the workers and their performance. The problem has been judged as becoming more acute with the increased use of noise generating machinery, engines, and power tools. Noise is defined as a complex mixture of simple sound waves and represents factory noises above 85 decibels in intensity. This type of noise is equivalent to that created by loud speech, while a quiet whisper reaches a noise level of 10 decibels.

There are two important physical characteristics of sound which determine its ultimate effects—intensity and frequency. The undesirable effects of noise may be enumerated under three classifications: the effects upon the ear and hearing; changes in organs other than the ear; and interference with speech communication. When the unprotected ear is exposed to a sudden and very intense noise such as that accompanying a loud explosion, ear damage with permanent hearing loss may follow. Such acoustic trauma involves tremendous sound intensities, probably exceeding 160 decibels, for short periods of time, with resultant rupture of the tympanic membrane, ossicular damage, and changes in the inner ear. Trauma of this type, while not uncommon in the military services, rarely occur in industry. Industrial noises seldom approach these tremendous intensities, but exposure time in industry is measured in months and years, instead of seconds only.

Ear Protection

Two industrial physicians associated with a leading aircraft corporation report that in those operations where attenuation of sound energy below 85 decibels is not possible, attempts must be made to reduce the intensity level at the ear of the worker. This can be accomplished by the use of properly administered ear protectors—devices which, when inserted into the external auditory canal, or over the auricle, absorb a variable degree of sound energy by providing resistance to the passage of sound waves. To be fully effective, protectors must reduce intensity levels below 85 decibels. They must also be comfortable, non-injurious to the external canal, and easy to apply, remove and clean.

Integrate Your Dermatitis Defenses

Hit-or-miss methods will not solve the industrial dermatitis problem. Protective creams, personal cleanliness and the use of mild skin cleansers are interrelated factors which must be integrated into an over-all program.

By
WILLIAM R. MARKLAND
and
EDWARD J. KEARNS
John H. Breck, Inc.
Springfield, Mass.

ONCE again as in World War II a shortage of manpower, caused by defense mobilization, is resulting in a huge influx of women and older workers into Industry. Since this relatively inexperienced labor group is generally more sensitive to external skin irritants and more predisposed to occupational dermatitis, industry can well be forewarned of the possibility of an increasingly severe industrial dermatitis problem.

On the surface, it might appear that dermatoses would be classified among the minor occupational disorders, but their frequency and cost actually make them of greater over-all importance than some major diseases. Workmen's Compensation Statistics of the various states show that industrial dermatitis accounts for about 65% of all occupational disease, and represents more than 50% of all dollars paid in claims. It has been further stated [1] that occupational dermatoses make up 3% of *all* compensation cases at an estimated cost of about $100 million per year.

Industrial dermatitis is caused by contact of chemical irritants on the skin acting either as primary irritants or sensitizers. A primary irritant is best defined as a material which will irritate all skins either upon immediate or repeated and prolonged contact depending upon the strength or concentration of the substance. A sensitizer is best described as an irritant which does not necessarily produce readily discernable cutaneous changes on first contact, but is believed to effect specific changes in the skin so that, after a period of time ranging from days to years, further contact on the same site or other parts of the body will cause dermatitis.

It must be realized, of course, that there is some overlapping in this classification of types of irritants. This is shown by Schwartz and Peck [2] who state: "A primary irritant may also be a sensitizer. Exposure to it may so condition the skin that further contact, even with such dilute solutions or for such a short time as would not before have caused any trouble, may now result in dermatitis."

While it is helpful to know whether or not a chemical used in a particular plant or process is a primary irritant or sensitizer, it is essential from the viewpoint of prevention of industrial dermatitis to have some understanding of just how such a chemical affects the skin. It is the opinion of the authors that most chemicals causing industrial dermatitis affect the skin in one or a combination of several ways:

(1) By direct chemical action on skin tissue,

(2) Through degreasing and defatting (i.e., removal of natural protective oils from the skin),

(3) By blocking and plugging of the pores of the skin,

(4) Through staining and adherence to the skin.

Control Measures

The basic general principle in the prevention of industrial dermatitis is to keep contact of irritants with the skin at a minimum. Protective creams aid in accomplishing this end by forming an effective mechano-chemical barrier between the skin and the irritating agent. It must be strongly emphasized, however, that before complete reliance is placed on the use of protective creams to prevent dermatitis problems, obvious engineering and sanitary measures should be instituted wherever feasible. Such measures [3] include enclosure of the troublesome process, installation of exhaust systems to remove and eliminate irritating dusts, fumes, and mists, the use of suitable, properly-cleaned pro-

For detailed descriptions of Skin Protection products, see pages 262–270 "Best's Safety & Maintenance Directory" 1952–1953 Edition.

FEATURE

This is the third of three feature articles on Washroom Sanitation. The first two articles, dealing with washfountains and antiseptic soaps, appeared respectively in the July and August issues of SAFETY MAINTENANCE & PRODUCTION.

Water-resistant cream protects workers from water solutions, such as liquid coolants, water-soluble cutting oils, alkali mist or spray, flux fumes, cement, or lime.

Pump type dispenser used on a jar of protective cream that resists oils and solvents.

Application of super-fatted cream following exposure to a wet, defatting label-removal operation to prevent dry chapped skin.

tective clothing, and strict enforcement of personal cleanliness.

It is difficult to overemphasize the role of proper personal cleanliness of the worker in dermatitis control. In fact authorities are in complete agreement in the recognition that cleanliness is the most important single measure to be taken in the prevention of industrial dermatitis. Moreover, proper personal cleanliness together with the use of effective protective creams and mild, non-irritating skin cleansers are so closely interrelated that it is almost impossible to discuss them separately. It is almost axiomatic that protective creams will not be effective unless employed in conjunction with a proper cleanliness routine set-up to assure complete removal of any irritants adhering to the film of protective cream.

Yet, the very fact that a worker has applied the protective cream invariably makes him want to remove it at lunch time and again after work, thus removing at the same time any irritants that remain on the film. Furthermore, this protective barrier prevents dust, dirt, grime, oil, etc. from becoming firmly attached to the skin, which fact permits the use of mild skin cleansers in place of harsh abrasive soaps or solvent cleansers that are frequently employed. This cycle of personal cleanliness is thus quickly established, readily accepted and easily enforced.

Consequently, these interrelated measures of protective creams, personal cleanliness and the use of mild skin cleansers will be discussed together as deterrents to the four previously-mentioned ways by which chemical irritants exert a destructive effect on the skin; i.e., direct chemical action, degreasing and defatting, blocking and plugging of the pores and staining and adherence to the skin.

Direct Chemical Effects

The direct chemical action on the skin of corrosive substances such as strong acids, strong alkalis and the salts of mercury, chromium, zinc, arsenic, antimony and phosphorus is perhaps best prevented by rubber gloves. This is especially true when the exposure is massive or continuous [4]; there is no protective cream that will protect the skin effectively enough to allow a person to dip his hand into a strong acid solution. Yet in reduced concentrations, especially mist and spray from alkali baths or plating solutions, protective creams are of definite value. Applied to all exposed parts of the body including the face, which cannot be successfully covered by other means, they form a water-insoluble barrier that prevents the irritant from contacting the skin whether it be in the dry form as cement and lime dust or in the liquid form as dilute water solutions of either acids or alkalis.

Sensitization of the skin by such substances as dyestuffs and dye intermediates, rubber and rubber accelerating compounds and synthetic resins is also guarded against by the impenetrable barrier set up by protective creams. It has been shown how sensitizers in contact with previously unexposed parts of the body can cause dermatitis, so it is evident how protection of the face from dust and fumes of these sensitizers will prevent the production of a dermatitis on this site, as well as guarding previously exposed cutaneous surfaces such as the hands and arms.

Defatting Materials

Degreasing and defatting of the skin results from repeated or prolonged contact with petroleum solvents, dry cleaning fluids and strong detergent solutions. In this condition the natural skin oils are extracted and removed, thus depriving the skin of its softness and needed lubrication, resulting in dryness, chapping and cracking.

This problem is dealt with in several ways. First, the beforehand application of a cream gives an added layer of protection, and, because the fat solvents must act on the film of ointment before they can attack the skin, some protection is offered against such solvents. Next, the use of a mild skin cleanser eliminates the defatting action of strongly alkaline soaps which would aggravate the condition. Finally, the application of a superfatted hand cream, after exposure to these materials and at the end of the day's work, will temporarily substitute fatty and emollient substances for the natural skin oils which have been removed. In this way, the hands are kept smooth, pliable and lubricated and a temporary barrier of fatty materials protects the skin against external irritation until such time as nature can replenish the natural protective barrier of skin oils.

Blocking of Pores

Blocking of the pores of the skin is the mechanism by which "oil acne" and folliculitis are produced by petroleum greases and cutting oils. Oil in constant contact with the skin blocks the openings of the sweat and sebaceous glands, especially those associated with the hair follicles. By this mechanical blocking the natural, oily secretions of the skin are held back, accumulate, harden and eventually cause enough irritation to produce dermatitis.

Several theories had been advanced as to the cause of oil dermatitis. One belief was that the fine, sharp metal particles in cutting oils caused minute abrasions and cuts which predisposed to the development of a rash. Another theory was that infection was the chief factor and that the germs responsible were passed on in the oil from one worker to another.

Exponents of the first theory thought that filtering the oil, and so keeping it as free as possible from metal particles, was the answer to the problem, while those who believed in the infection theory thought that sterilization of the oil by heating or by the addition of germicidal chemicals would eliminate dermatitis.

Experience showed, however, that neither filtering nor sterilizing cutting oils was sufficient to solve the

problem and gradually the belief developed, which is accepted today, that in the prevention of oil dermatitis the emphasis must be put not on cleansing the oil but on cleansing the worker.[5]

Experiments with groups of workers under actual industrial conditions have shown that the beforehand application of a protective cream and regular and vigorous attention to the removal of the oil and dirt residue with a mild skin cleanser after each exposure will bring the problem of oil acne and dermatitis under control without resorting to any special treatment of the oil itself.

Tenaceous Compounds

Staining and adhering compounds such as carbon paper, dyes, multigraph ink, paints and varnishes attach themselves to the unprotected skin with great tenacity and offer a distinct removal problem, aside from the fact that synthetic resins in the paints and varnishes also can act as sensitizers. A barrier covering on the skin holds off these sensitizers, presents a less substantive surface to the staining compounds, and thus eliminates the need to use highly alkaline and abrasive soap powders or solvent cleansers for their easy removal.

According to dermatologists, harsh skin cleansers are frequently found to be the actual cause of industrial dermatitis that, before investigation, appeared to be caused by some chemical irritant that was handled. Dr. Louis Schwartz[6] states: "Synthetic dye workers, printers, dyers, workers with coal tar, pitch, asphalt, creosote oil, petroleum oils, greases and soot are apt to use, for cleansing their hands after work, strongly alkaline and abrasive soaps which abrade and dissolve the superficial epithelium of the skin, volatile solvents which defat the skin, and powerful bleaching agents which cause chemical changes in the epithelium by chlorination and oxidation. The damage to the skin caused by such harsh cleansers . . . in many cases is the sole cause of occupational dermatitis."

The full import of this observation was vividly demonstrated to the authors recently when a large manufacturing plant urgently requested a protective cream to prevent an outbreak of dermatitis among a group of women workers who impregnated twine with a dyestuff solution. The officials of this plant were sure that the dyestuff was the cause of the difficulty and that they needed a barrier to keep the dye solution from irritating the skin. When the entire operation was observed, however, it was discovered that the women were anxious to get home at the end of the work period and were annoyed at the long scrubbing time required to remove the dye from their hands. As a consequence, some obliging chemist in the plant laboratory performed what he thought was a helpful service by supplying them with strong solutions of potassium permanganate and sodium bisulfite. The powerful oxidizing and reducing actions of these chemicals did rapidly remove the dye stain, but they also produced the

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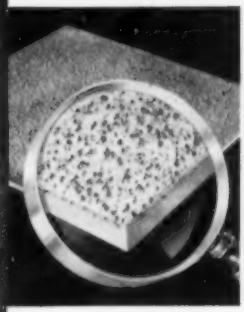

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dermatitis!

The difficulty was solved by the use of a suitable protective cream and a mild skin cleanser. Application of the protective cream before starting work effectively combatted not a sensitizing property of the dye but its penetrability and adherence to the skin, thus affording quick, easy removal of the stain by a mild skin cleanser instead of the harsh chemicals formerly employed.

Selecting a Protective Cream

The difficulty in choosing a protective cream to guard against an industrial irritant can be recognized when it is realized that there are about 2,000 known chemical irritants. Obviously, no single protective cream will provide protection against all of these hazards. On the other hand, the U. S. Public Health Service has compiled the following list of the ten leading chemical causes of occupational dermatitis in the order of their importance: Petroleum oils; greases; alkalis (including cement and concrete); solvents; chromic acid and its salts; metals (including metal plating); dyes; rubber and its compounds; paints and varnishes; and synthetic resins.

From this list it can be seen that essentially, two types of protective creams are required. One is the oil-resistant type, designed to protect against lubricating oils, cutting oils, petroleum solvents, rubber dust, synthetic resins, tar, pitch, printing inks, and paints. The other is the water-resistant type designed to protect against liquid coolants, emulsified cutting oils, mist and spray from alkali baths or plating solutions, flux fumes, cement, lime, water and water solutions.

In addition, the extensive use in industry of various degreasing materials and solvents which cause severe defatting and drying of the skin, presents the additional problem of dry, chapped hands, and skin. This skin condition can be corrected and prevented by the application, following a day's work, of a super-fatted cream designed to substitute temporarily a fatty material for natural skin oils.

Special Creams

These two basic types of protective creams mentioned above can be utilized for the incorporation of specific ingredients to produce specialties such as a product that will prevent skin irritation by ultraviolet light from welding operations or sterilizing lamps, or a special product to detoxify the specific irritant of poison ivy. Most manufacturers of protective creams find it necessary to thus alter a basic formula to suit a particular need since it is well nigh impossible to maintain a complete line of preparations that will answer all existing problems.

While many laboratory tests [7] have been devised and performed to test the efficiency of these product types, they cannot always approach the conditions found in actual practice and illustrated in the foregoing discussion of the problem. Some of the unduplicated factors include humidity, friction and abrasion, magnitude of exposure and nervous tension with its attendant sweating.

These observations lead to the conclusion that the best test is a practical use test under normal conditions found in industry. It is for these reasons that we say to safety officials of various industries, when they are searching for a protective cream to guard against specific irritants, "Here is a protective cream which in our laboratory tests, offers good protection against the irritant that is giving you trouble. Furthermore, it has been used satisfactorily in operations closely resembling those in your plant. Take a few jars and try them out—see if they will help you with your problem."

Test Procedure

It is highly important, however, that a routine procedure be established and carried out under proper supervision and not be left to the worker's own volition. Consistency and conscientiousness in following the recommended practice are necessary for effective results. Cooperation on the part of the employee is much easier secured if the protective cream appeals to him. Then such cosmetic factors as color, odor, appearance

and "feel" become important. If a preparation leaves a cumbersome feel on the hands, the worker will see little preference over the use of gloves. Again, the cream should be able to be applied easily and should not leave the hands slippery or sticky as this would make the use of tools dangerous. Attention to these small details by the manufacturer of protective creams goes a long way towards making the worker want to use such a product.

Some companies have found it helpful to distribute a small jar of the protective cream to the worker who is then responsible for the safe keeping of that jar and must return the empty jar to obtain a new one. The frequency with which he requests a new jar indicates in some degree whether or not he is regularly using the cream or whether or not he is wasting it.

Supervision of employees is perhaps better carried out by making the protective cream available in a central washroom. In such instances the new pump dispenser illustrated here offers the advantages of ease of application and cleanliness. A simple push of the plunger dispenses the cream—the cap does not have to be removed and put on again—and a worker can obtain a fresh application of the product uncontaminated by the hands of fellow employees.

It thus becomes necessary for manufacturers and industrial health leaders to cooperate in the proper employment of Protective Creams to combat the high incidence of industrial dermatitis and achieve the best results for the promotion of personal safety, efficiency and maximum production in history.

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Pictures by courtesy of John H. Breck, Inc.

Sodium and Potassium Dichromates and Chromates

A MANUAL on the safe handling and use of "Sodium and Potassium Dichromates and Chromates" has been issued as Chemical Safety Data Sheet SD-46 by the Manufacturing Chemist' Association, Inc.

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The manual emphasizes that sodium and potassium dichromates and chromates may be transported and used with safety, if properly handled. Possible health hazards involve irritation of mucous membranes, eyes and skin. Harmful effects may be produced if the materials are inhaled in dust or solution mist forms. Ingestion must be avoided at all times. The manual outlines training for employees in standard methods of safe practice and use of equipment for personal protection.

Recommendations are also made regarding engineering controls, ventilation methods, tank cleaning and repairs, and waste disposal.

The Medical Advisory Committee of Manufacturing Chemists' Association has supplied general first-aid principles and specific recommendations for treatment by physicians if exposure occurs.

Orders for Chemical Safety Data Sheet SD-46, "Sodium and Potassium Dichromates and Chromates," accompanied by remittance of 25 cents, should be addressed to the Manufacturing Chemists' Association, Inc., Woodward Building, 15th and H Streets, N.W., Washington 5, D. C.

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THE INDUSTRIAL Nurse

EDITOR

ROSAMOND J. WEBSTER, R.N., A.M., Ph.D.

Gaining Good-Will

A BASIC principle in the effective functioning of an industrial or commercial organization is the winning and retaining of the good-will of the employees. This involves more than the matter of wages, hours and employment security, important as these are. A former surgeon general of the U. S. Public Health Service some years ago pointed out that the minor difficulties often loom large and tend to unsettle an otherwise effective organization. An outstanding complaint may relate to transportation or parking, waiting in line at the cafeteria or shortage of paper towels in the wash rooms.

These may seem far fetched insofar as industrial hygiene and industrial nursing are concerned. Nor are these matters with which the industrial nurse need necessarily be concerned. But the information may reach her, whereas it may not be placed before plant management until an explosive situation develops.

A particular industrial nurse comes to mind. She was employed in a heavy industry in which injuries and burns were of frequent occurence. The plant was an old one and the engineering was outmoded. And yet, when an ailing or injured worker had to visit the medical office, he often failed to do so, or delayed overlong. Why? Simply stated, this nurse treated the workers as if they were a bunch of troublesome boys in a country school. She did not have their goodwill, nor did she or management realize this fact. Perhaps she was superannuated, old fashioned in her ideas, and too bossy of mein to serve them as an industrial nurse.

There must be few such nurses today—at least let us hope so. Interest in all the gripes and complaints of the workers, insofar as safety and health protection are concerned, should interest the industrial nurse in a positive way. She can explain, help, inform, educate, correct—all within the immediate range of her responsibility. Certain matters, of course, are the concern of others.

True or False

A WORKER suffers an injury during his regular course of employment. The plant medical department provides adequate first aid and subsequent care. And yet, while the average worker with similar injuries would return to his job in perhaps 24 to 48 hours, a particular individual continues to complain of pains, aches, and inability to resume his previous occupation. Are his complaints warranted, or is he merely trying to prolong the period of disability for reasons best known to himself, or even unrecognized by him?

This is one of the major problems with which industrial medical departments and workmen's compensation boards have to contend. A leading British physician some years ago summarized this situation quite accurately. He wrote that it is unfortunately the experience of most physicians that nervous people who are given to self-examination, unconsciously foster subjective sensations which their stronger and better balanced neighbors would ignore. The idea of illness or a possible injury and its consequences obsess them. Their pains are real, but often psychic. Such people are victimized by their unstable nervous system. Too often they make no stand against morbid introspection. Frequent gossiping with others who find themselves in similar circumstances, continual rehearsals of the illness or the accident, and the oft-repeated recital of sensations, all act as cooperating factors in bringing about a condition of auto-suggestions.

In dealing with such patients many physicians encounter various difficulties. Often the family physician is led to assist such complaining and initially injured workers in pressing claims for disabilites which competent, impartial medical examiners cannot confirm. "Conversation conscious" is a term that has been applied to such claimants. They may need understanding, but the industrial nurse who listens to their complaints and tales of suffering must avoid helping to confirm them in the belief of illness and disability, which is not justified on any practical basis.

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A DISTINGUISHED leader in the field of diagnosis, research and treatment of diseases of the heart notes that 40 years ago, cardiology was essentially unknown. Since that time, considerable progress has been achieved. The prevention of hemalytic streptococcus infection by penicillin and other measures is already helping greatly to reduce the chronicity of rheumatic fever and its serious after-affects. The expectation is expressed that in another generation there will be little rheumatic heart disease. The mortality from subacute bacterial endocarditis has been reduced to about 20 percent because of the use of various antibiotics. A few years ago it was fatal in nearly every case. Syphilitic heart disease and aneurysim of the aorta are disappearing, owing to early diagnosis and proper treatment of the original syphilitic lesion. Hypertensal heart disease has been controlled in a number of cases of serious involvement. It is now known that the patient with coronary heart disease can recuperate through the natural development of an adequate collateral circulation or through the good healing of myocardial infarction. Many patients with coronary heart disease are found to be in good health 10, 20 or many years later, something that was unheard of as recently as 20 to 30 years ago.

On the other hand, despite these advances, the incidence and mortality rates of cardiovascular-renal disease has increased markedly. Of all the deaths in the United States, 51 percent can be attributed to these diseases. The major causes seem to be such conditions as hypertension and arteriosclerosis. These are areas in which much research has been done and much more will be necessary because the causes of these conditions are not fully understood. Once such knowledge is available, it will simplify the task of finding preventive and curative measures. In the meantime all those ailing from these disabilities should be under the care of their physicians or referred to them when the medical signs are discovered in pre-employment or periodic examinations in industry. Follow-up by the industrial nurse would seem to be a desirable measure.

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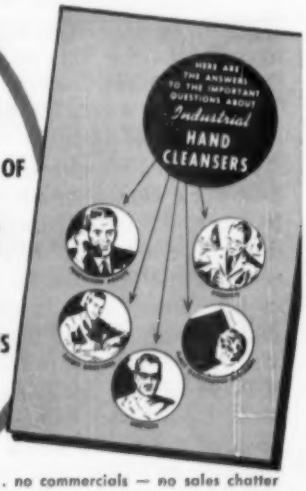

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6532 St. Antoine St. *Safety division* Detroit 2, Mich.

(For details use the Reader's Inquiry Card on page 77)

trade names for this product—Rimifon, Pyricidin, Dinacrin, Ditubin, Isonizide, and others. The National Tuberculosis Association has summarized some data concerning this product.

It is an easily synthesized chemical which will cost little when released for sale on physicians' prescriptions. It is not patentable and will be readily available. The drug has been found to be effective against tuberculosis germs in the test tube, and in tuberculosis infections in experimental animals, even when there is delay in starting treatment. If treatment is discontinued too early in such experimental animals, relapses occur. Virulent tubercle bacilli have been grown from small residual pulmonary lesions removed at autopsy of experimental animals, which apparently had recovered following treatment with the drug. It appears to have advantages over streptomycin and PAS (para-amino salycilic acid) because it is cheap and of low toxity, because it is administered by mouth and does not irritate the gastro-intestinal tract. From a therapeutic standpoint, it may not prove to be markedly superior to the combination of streptomycin and PAS.

The new drug is not a preventative, but only a better method of treatment of a patient who already has tuberculosis. Even a greatly improved drug is unlikely to exert a rapid effect on the prevalence of tuberculosis though it may accelerate control of tuberculosis used with other proved effective control measures. These include rest, surgery and other well-tried and useful procedures. Industrial nurses can be of help by passing on this information to workers whose relatives or friends have tuberculosis. Progress has been made. Much more remains to be done. Most important of all is finding those who have tuberculosis and don't know it.

The Complainer

WHY do people complain? What shall be done about workers who are always finding fault about working conditions—"it's too hot," "it's too cold," "it's drafty," "close the windows," "open the windows," "shut off that fan," etc. They may often be just ordinary individuals who have not become adjusted to working in an industrial establishment. Or, they may be involved in emotional conflicts growing out of their personality make-up, seasoned with neurasthenic manifestations.

In neurasthenia, the individual commonly complains of headache, particularly of the occipital type, indigestion, acid stomach, constipation, generalized weakness, easy fatigability, inability to concentrate, and lack of staying power on the job. There may be many more complaints, depending on the individual. This picture is quite common and arises on the basis of many different causes. Certain specific physical factors such as anemia, low blood pressure, low blood sugar, foci of infection or various endocrine disorders may give such a picture. That means a very careful physical examination is necessary in order to rule out some of these factors, and determine which might possibly be at the root of the trouble.

Some of these cases seem to arise largely on a constitutional basis. Still others seem to have their roots in emotional stresses and mental conflicts. There are few experiences which are more fatiguing than unpleasant emotions. Treatment may not be possible in the busy medical department in industry. One thing the chronic complainer and possible neurasthenic wants almost above all else is someone to talk to about his complaints, what he wants is not preaching but simple assurances and willingness to give his complaints and gripes a willing ear. That is what a mature and knowing industrial nurse can ordinarily do with success. There is one hazard that must be avoided. That relates to the tendency of such individuals to stay away from their work for periods of time. The nurse can steer a middle ground—listening of course, but the job must not suffer.

Summer Weather

OBSERVATION of sunbathers at public beaches gives adequate evidence that many are prepared to expose themselves for prolonged periods in order to

obtain skin tanning. While the young women, particularly, are inclined to use various oily preparations as protection against sunburn, the number of bathers showing signs of severe burns is large. This is especially evident early in the summer, and the number with red and blistered skins decreases as the hot weeks are extended.

Sunburn is of course not a true burn, but an inflammatory reaction of the skin which sets in from 2 to 12 hours after exposure to intense sun rays. Fair skinned persons may get a severe reaction in a much shorter exposure. In addition to itching and burning, there may be complaints of headache, anorexia, rise in temperature and inability to sleep. In extreme cases, there may occur symptoms of collapse and nervous system irritation phenomena, as a form of sunstroke.

Workers returning to their jobs after a week-end or longer period of sun exposure, may show evidence of their foolhardy conduct by red, burning skin, blisters, fever, general malaise, and inability to work. From the point of view of the industrial nurse, she can best serve the employees by timely warnings, bulletin board notices, group conferences and distribution of printed, mimeographed or typed notices of the hazards of sun overexposure, the methods of protection that are most helpful, and what to do in case sunburn occurs.

Other matters of concern include excessive perspiration in hot occupations and the desirability of providing salt tablet dispensers; dangers from drowning and cramps suffered while swimming; approved methods of artificial respiration, including the arm-lift, back pressure (Nielsen) method; insect bites, and accidental injuries common to outdoor living during the summer months. Some words of caution about proper dieting and selection of foods suitable for hot weather consumption would also find a proper place in an industrial nurse's summer advice.

INDIVIDUAL
CUTTING OIL
SANITATION

FOR YOUR PLANT!

Here's how to prevent costly coolant spoilage and eliminate foul odors: ask your DOLGE Service Man to take samples of your coolant for *free* bacteriological and chemical analysis. A complete laboratory report will show the correct coolant handling method for *your particular operation.*

Only if tests warrant it will a DOLGE STERIDOL GERMICIDE be recommended—a "tailor-made" preparation to meet *your exact needs.* Used as directed it will not irritate the skin or corrode metals. The cost?—Far less than a cent per gallon of coolant!

Write for Booklet "Cutting Oil Sanitation"

STERIDOL

dependable DOLGE

WESTPORT, CONNECTICUT

(For details use the Reader's Inquiry Card on page 77)

An Achievement in Health Restoration

LARGE employers of so-called white collar workers—including many young women in clerical, filing, and typing and stenographic departments—for many years faced a problem of a comparatively high rate of pulmonary tuberculosis among such workers. One of the large insurance companies recognized this problem just about 40 years ago, and started to do something about it. Certain fundamentals regarding the disease were recognized.

The first one was that early discovery of the pulmonary affliction usually leads to early recovery. Prompt and adequate treatment followed by occupational rehabilitation and medical supervision for some years after apparent recovery are additional essentials of such a control program. The fundamental aspect of case-finding rests in annual medical examinations, which include fluoroscopic examinations of the lungs and, when thought necessary, chest X-ray examinations as well. Of course, similar examinations are provided for all new applicants for employment at the main office.

This systematic screening of applicants for employment and employees has been judged to have been the major factor in the reduction of new cases of tuberculosis among employees from 5.5 per 1,000 in 1929–1932, to the remarkably low figure of 0.3 in 1948–1951. With the extensive medical and personal service provided for those who have been found infected—and before the days of the newer drugs and surgical procedures—the survival rate and recovery rate had been unusually good. The medical service provided to employees by this company—and there are others, of course—has distinctly demonstrated that with measures already available—whether or not newly announced drugs finally prove to be of major help—physicians already have the means of bringing tuberculosis into the area of fairly rare diseases. But we must still find the infected individuals early in their disease state, and must obtain for them the necessary institutional and other care. In case-finding, industrial nurses can be of much help, whether or not their own departments provide the X-ray facilities.

Use the Reader's Inquiry Card on page 77

What's New...

For your convenience in obtaining descriptive literature of products listed here, use the Reader's Inquiry Card. Just write in the code number given with each item. Or send written requests to:

Service Dept.,
SAFETY MAINTENANCE & PRODUCTION

GOGGLE OF NEW DESIGN

(Use Key # 628 on Inquiry Card on page 77)

A NEW design has been perfected by the Pennsylvania Optical Company for its industrial spectacle-type safety goggles. For comfort and safety, the lenses exceed all Federal lens specifications for resistance to impact and optical perfection for clarity of vision.

Called the "220 Series Goggle," the new design has the following features: The sturdy metal frame supports the lens, at the correct angle, close to the face for added protection and to provide a wide field of vision. Unobstructed side vision is achieved by placing temples above the line of sight. The bridge is strengthened by joining the eye wires at four points to distribute evenly any stress over a wide area.

Other important refinements include the elimination of unnecessary metal to reduce weight and reinforcement at the important points to assure longer life.

The "220" Goggle is available with curved or flat standard 47 m.m. or 44 m.m. clear or absorptive safety lenses. Side shields of wire mesh, leather, or clear or green acetate are interchangeable and easily replaced. Many bridge widths and lens sizes together with side shield combinations, make this goggle adaptable for many operations requiring eye protection.

NEW WEAVE FOR DYNEL CLOTHING

(Use Key # 629 on Inquiry Card on page 77)

A NEW line of dynel industrial clothing in subdued color patterns, claimed to outlast most similar garments in use today, is announced by Chem-Wear, Inc.

Made from a newly developed fabric known as "Chem-Weave," which employs special weaving and processing of dynel yarns, the result is stronger, lighter-weight chemical-resistant industrial garments. This fabric tests considerably stronger than cotton and is among the strongest of existing synthetics.

"Chem-Weave" shows exceptional resistance to chemicals. In immersion tests with 59 commonly-used industrial chemicals, the dynel fabric proved highly resistant with minimal loss in tensile strength, even in high concentrations and at temperatures up to a boil. In the picture, the cotton clothing at left had

been put in a 25% solution of sulfuric acid for an hour at 50 degrees C, while the dynel clothing at right was unaffected after immersion in 70% solution for fifteen hours at 50 degrees C.

For increased wearing comfort, "Chem-Weave" has an unusually high factor of air flow, testing considerably better than former fabrics of chemically resistant yarns. The new "Chem-Weave" garments are a mottled, gray shade, a tone devised for use in chemical operations. This gray shade hides staining, resists discoloration and keeps the garments looking serviceable longer. The garments will withstand repeated industrial launderings. They dry smoothly unwrinkled, saving the expense of ironing. The new dynel clothes are recommended for plants, shops, service stations, etc., where workers handle corrosive chemicals. Matching shirts and work trousers, coveralls and aprons, all in a full range of sizes are available.

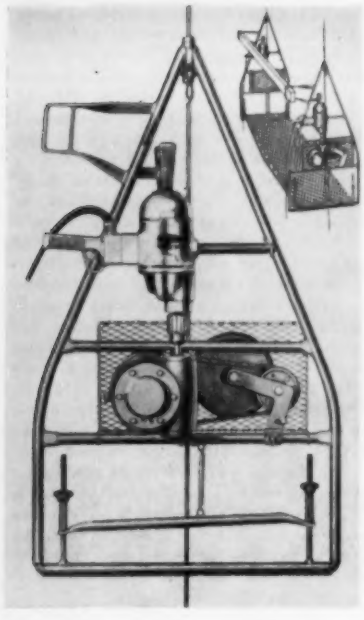
NEW AUTOMATIC SPRINKLER

(Use Key # 630 on Inquiry Card on page 77)

FIGHTING fires at the molecular level by diluting the active ingredients of flame, Grinnell's new automatic Protecto-Spray gives quicker extinguishment of fires. When used in place of standard automatic sprinklers for special hazard protection such as high piled tire storage, it reduces ceiling scorching and checks fire spread with 30% less water.

When studies of the nature of flame showed that it results from high velocity collisions between molecules of oxygen, which make up 21% of air, and molecules of hydrocarbon in gases distilled from burning material, a method of controlling flame became obvious. By interposing inert water vapor molecules between oxygen and hydrocarbons, collisions are prevented and the flame is extinguished.

The heat from a fire normally raises the temperature of nearby flammable material to its distillation and ignition temperatures. The automatic Protecto-Spray diverts this heat to vaporize water droplets. This removal of heat checks the spread of fire and the resulting water vapor dilutes the flame gases so that they cannot burn. Producing a wide range of water droplet sizes, small ones to produce water vapor and larger ones to wet and cool the burning material, the Protecto-Spray is a new and more effective weapon against fire in hazardous storage and volatile materials. It is approved by both the Factory Mutual Laboratories and the Underwriters Laboratories.



POWERED "SWING STIRRUP"

(Use Key # 631 on Inquiry Card on page 77)

AN ALL-METAL stirrup for swing scaffold use, powered by a heavy-duty electric drill, has just been introduced by Bil-Jax, Inc., manufacturer of tubular steel scaffolding and equipment.

Built around a worm gear and pinion that will not move in either direction unless power is applied, the stirrup climbs cable like a monkey. The cable does not wind onto a drum. The lifting capacity per unit over and above the weight of the stirrup and stage is approximately 700 lbs. and speed of travel about 16 feet per minute. Stirrup accommodates staging up to 24 inches wide. 75 feet of ⅜ inch steel cable is furnished with each stirrup. Safety clamp at upper ferrule is automatically actuated to prevent accidental descent, and bracket for guard rail is provided. The electric drill furnished is quickly removable for use on the job if desired.

SAFETY SOLVENTS

(Use Key # 632 on Inquiry Card on page 77)

A COMPLETE series of Safety Solvents replacing carbon tetrachloride are now available in volume quantities from TECT, INC. of N. J. Offered under the trade name "TECSOLVS," 10 different solvents can now be supplied for a great variety of uses in manufacturing, processing, and plant maintenance.

Low in toxicity, TECSOLVS may be used with vapor concentrations in the air 8 to 20 times greater than permissible with carbon tetrachloride. In addition, these versatile materials do not have a cumulative effect on the human system comparable to that of carbon tetrachloride.

Some of the TECSOLVS are completely non-flammable; others will burn only with difficulty. They are finding widespread use for metal cleaning, plant and electric motor maintenance, wax dispersion and removal, and other special applications. Users have found, too, that the solvents TECSOLVS have little or no tendency to attack painted surfaces, natural or synthetic rubber, plastics, or insulated wire.

PRESSURIZED VL EXTINGUISHER

(Use Key # 633 on Inquiry Card on page 77)

A NEW one and two quart Vaporizing Liquid fire extinguisher designated as the Pressurized Model B has been announced by The Fyr-Fyter Company. It features fast, one-hand operation with accurate control. Aim, squeeze the grip . . . and a powerful 30-foot fire-fighting stream is instantly released. The elimination of pumping or any other manual operation, enables the operator to aim a direct, on-target stream. The vaporizing liquid is completely discharged in 17 to 25 seconds by the positive force of odorless, non-toxic, moisture-free, pressurized nitrogen.

The extinguisher is made with all-brass precision construction. To simplify inspection, cleaning and recharging, the entire valve assembly and pick-up tube unscrew as a unit from the shell. The large valve unit opening in the dome also serves as the "filler" opening. Special gaskets that resist extremes in temperature, corrosion, and solvents assure a positive, leak-proof seal to hold the pressure charge. A visual gage constantly shows

the pressure condition. Effective extinguishing action is possible from any angle.

It is approved by Underwriters' Laboratories and is recommended for use on burning liquids, live electrical fires, and also small general combustible fires.

COLLAPSIBLE GRAPNEL

(Use Key # 634 on Inquiry Card on page 77)

A NEW collapsible grappling iron, designed for faster and safer handling by rescue teams, is being offered by E & K Grapnel Co. The unit is so constructed that the three hooks can all be turned in one direction for compact and safe storage and transportation. Only a few seconds of time are required, however, to open and extend the grapnel to its working position.

The E & K Collapsible Grapnel is specially constructed for rescue squads, police emergency squads and fire departments, and can be transported easily and with greater safety in cars or emergency units.

NEW AIR FILTER

(Use Key # 635 on Inquiry Card on page 77)

DEVELOPED originally to remove radioactive contamination from air exhausted during atomic energy plant operations, a new type of air filter, called the Ultra-Aire Space Filter, has now been made available for general industrial, institutional and laboratory use by Mine Safety Appliances Company. Each filter is reported to be tested against fine chemical smoke and is certified to be at least 99.95% efficient against particles as small as 0.3 micron in diameter. In practice, the filter removes particles as finely divided as tobacco smoke, particles of which range from .05 to .1 of a micron.

Simple in design and construction, the filter offers 46,000 square inches of filter media in the 1000 CFM size, and is available in air flow sizes of 50, 500 and 1000 CFM. Its effective service life, when protected by a roughing filter, is about a year and a half.

The new filter is said to have many applications where toxic and radioactive particles are a threat to health or production processes. In hospitals, it safeguards against bacteria and some virus when they are air-borne in operating rooms, isolation wards, and experimental laboratories. Placed in laboratory ventilation hoods, it safeguards workers in areas where toxic particulate matter is present. It can be made a part of an air conditioning system, either in the intake or exhaust and prevents contamination of pharmaceuticals, photographic films, food products, etc.

ENGINE SAFETY CRANK

(Use Key # 636 on Inquiry Card on page 77)

A HAND crank designed to eliminate accidents in the manual cranking of any type of internal combustion engine is being made by the Safety Crank Company. It can be mounted on any engine that uses a crank or rope.

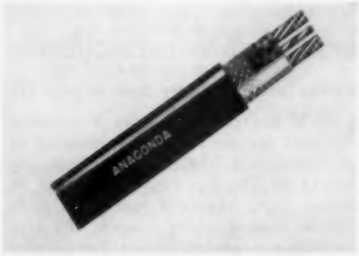
The Safety Crank is an all-steel fabricated product. It has an over-running clutch that stops all counter-clockwise motion of the crank handle, thus preventing any injury to the operator or engine. The cranks are being used on the engines of oil companies, pipe lines, drilling contractors, building contractors, dredging companies, railroads, coal mines, farms, etc.

NEW CUP-TYPE GOGGLES

(Use Key # 637 on Inquiry Card on page 77)

A NEW line of cup-type goggles has been introduced by Fendall Company, manufacturers of head and eye protection equipment. Included in the new goggle line are Chippers, Welders, and Dust and Splash goggles, which are said to incorporate many new features that provide the greatest possible degree of comfort to the wearer, plus absolute safety. It is also claimed that the new goggles far exceed requirements of Federal Specifications.

Company officials emphasize the comfort design and pressure-free fit of the eye cups, with each cup individually molded to conform to both right and left eye areas of the face, with smooth wide-bearing facial contact surfaces that evenly distribute the weight. More than 300 perforations in side-shield allow ample air circulation, and added ventilation through slots in lens ring provides circulation across inner lens surface to reduce fogging. Exclusive Herringbone-shaped channels in lens seat allow air entrance but block out foreign particles. Cups are unaffected by moisture or perspiration. Both the Dust Goggle and Chippers Goggle are available in transparent models with special side-shield ventilation. All Fendall Goggles have ball-chain nose bridge, with quick acting lever-type lock for easy adjustment.



SAFETY MINING-MACHINE CABLE

(Use Key # 638 on Inquiry Card on page 77)

A NEW portable mining machine cable which reduces the chance of shock hazard and arcing when a break occurs, has been developed for Anaconda Wire & Cable Company by C. B. Peck, manager, Portable Cable Sales, after consultation with E. O. Jackson, gen. supt. and George K. Burnhart, master mechanic of Independent Coal & Coke Company. The new cable has successfully passed trials in the field and is offered for immediate use.

The purpose of this cable design is to cut off the power the instant damage occurs to the positive conductor insulation. The cable is used in conjunction with a ground trip relay which, when energized, shuts the power off. It is especially adaptable for use with shuttle cars and other mobile mining machines.

In adition to its safety features, the cable meets all the requirements of the Federal Mine Safety Code, Schedule 2E of the U. S. Bureau of Mines, and Act #206 of the Commonwealth of Pennsylvania.

EXPLOSION-PROOF GERMICIDAL LAMP

(Use Key # 639 on Inquiry Card on page 77)

CROUSE-HINDS type EVF explosion-proof germicidal lamp fixture is designed to accommodate General Electric or Westinghouse single-pin G36T6 Slimline germicidal lamps, which produce ultra-violet energy for killing airborne bacteria, viruses, yeasts, molds, and fungi.

The fixture consists of a tube of explosion-resisting Vycor glass which houses the lamp and which is sealed at each end into aluminum end-castings with threaded covers for access and relamping. The special Vycor glass was selected for its extremely high ultra-violet transmission. Several flexible and rigid attachments are available to mount the fixture in any position. The entire fixture is designed and constructed in strict accordance with Underwriters' Laboratories, Inc., requirements for equipment for Classes I and II for hazardous locations. A reflector can be supplied to protect personnel from direct ultra-violet radiation, and a lamp tube guard to prevent tube breakage. The reflector can be mounted either above or below the lamp, depending upon the position in which the fixture is used.

This fixture will find ready application in the manufacture of drugs and chemicals where explosive or flammable solvents are used in the processes and where the utmost sterility must be maintained, as well as in some parts of the food processing field including distilleries.

PLATFORM LADDERS

(Use Key # 640 on Inquiry Card on page 77)

SAFETY Ladders, designed and built by the Dayton Safety Ladder Company, are constructed with a large, roomy platform at the top. This platform provides a generous amount of working space and gives the workman a feeling of confidence and safety as he works. It can also be folded to form an extra step when additional height is required.

Steel handrails are built on both sides of the platform to provide extra safety. An automatic locking feature is provided to assure safety while ladder is in use. Dayton Safety Ladders are built of tested airplane spruce with rigid steel supports to give them great strength and lightness of weight. The ladders fold compactly for storage. Standard rubber safety shoes are included at no extra cost. The ladders are available in sizes ranging from 3 feet to 16 feet in height, measured from ground to platform.

25 FREE BULLETINS & CATALOGS OF UNUSUAL INTEREST

Out of the hundreds of Free Bulletins & Catalogs reviewed on this page during the past few months, the following have been selected for their outstanding presentations or informational content on safety and maintenance subjects. The Reader Service Department offers these reviews again for executives who may have missed them the first time. To obtain copies, write in the key numbers on the Readers Inquiry Card below.

PERSONAL PROTECTION

Conserving Manpower 250
Mine Safety Appliances Co. How to conserve our country's most critical resource, the employee, is the subject of an extremely well presented and effective 24-page brochure. With a minimum of words, the booklet pictorially shows the real threat of accidents to our national welfare and indicates how safety equipment can be used to protect workers.

Protective Clothing 251
American Optical Co. This 48-page catalog offers basic data, in an unusually helpful form, on the company's complete line of protective clothing, made of such materials as asbestos, leather, fire-resistant duck or cassimere, and coated fabrics. A valuable chart shows the type of protector needed for various hazards in typical industries. Recommended uses are also given for each item of clothing.

Sweat-Safe Safety Shoes 252
Hy-Test Safety Shoes. A 4-page bulletin describes the exclusive Bal Tan sweat-resistant leather insoles used in Hy-Test shoes. These insoles give added life to the steel-toe shoe under severe conditions and stay soft and pliable for maximum foot comfort.

Visor Goggles 253
Jones & Co. An illustrated bulletin describes the unusual features of the one-piece plastic goggle with an opaque visor attached to reduce overhead glare. Four models of the eye protector are shown.

Safety Gloves & Clothing 254
Olympic Glove Co. A uniquely comprehensive catalog of all types of industrial gloves and also other protective clothing such as aprons, sleeves, jackets, leggings, etc. Special types are offered for acid workers, welders, linemen, and burners.

Industrial Boots 255
Beacon Falls Rubber Footwear. This 4-page SM&P reprint emphasizes three safety features of the "Top Notch" line of rubber boots, pacs and shoes: the steel safety toe, the new rubber material that resists abrasion, and the special arch and heel design for comfort and traction.

Neoprene-Coated Work Gloves 256
Granet Corp. The careful workmanship that goes into the making of these neoprene-coated industrial gloves to assure safety is described in a 4-page bulletin. Several styles are illustrated and a performance chart shows the resistance of the gloves to specific chemicals, including organic and inorganic acids, alkalis, salts, oils and solvents.

Plastic Optical Lenses 257
McLeod Optical Co., Inc. Optically correct shatter-proof, splinter-proof and light-weight plastic lenses are described in a small 4-page folder which outlines the safety advantages of these lenses for industrial workers, as well as for children and sports purposes.

Drybrow Sweatbands 258
American Allsafe Co. This 4-page SM&P reprint shows how that the wearing of cellulose sponge sweatbands keeps hot temperatures from sapping workers' energy. Well illustrated, the folder explains that the sweatband aids production by its cooling evaporative effect.

All-Plastic Goggle 259
Bausch & Lomb Optical Co. The BAL-guard Eye Shield is fully described and illustrated in this 4-page SM&P reprint. The bulletin emphasizes the unique features of this light-weight all-plastic ventilated goggle which has a one-piece replaceable lens.

MAIL POSTAGE PAID CARD FOR MORE DATA

Sureseal Aprons & Sleeves 260
Surety Rubber Co. Synthetic rubber aprons and sleeves are described in this well illustrated 2-page bulletin. Available in three grades for light, medium and heavy duty, various styles of body and arm protective clothing are shown. The bulletin also has a list of commonly used chemicals against which the material offers maximum resistance and service life.

SKIN PROTECTION

Emergency Showers 261
Logan Emergency Showers, Inc. Full operating details of a new type of emergency and decontamination shower for fire, acids, caustics, radiological, bacteriological and other contaminants are offered in this illustrated 6-page folder. Unique features emphasized are the multiple sprays to deluge all parts of the body and the swing gate which operates the shower automatically.

Skin Cleansers 262
Lightfoot Schultz Co. This 4-page illustrated bulletin tells why the Lightfoot granulated skin cleansers are preferred in industry. The bulletin describes eight types of powdered soaps with suitable areas of application, and also gives data on bar and liquid soaps and on a new soap dispenser.

Answer to Industrial Dermatitis 263
Boyer-Campbell Co. A new 6-page catalog and price list describes the various types of "Skin-Cote," protective hand creams for guarding workers against dermatitis-producing irritants. The catalog contains a comprehensive chart of chemicals and processes and the type of cream recommended for each.

Group Washing Equipment 264
Bradley Washfountain Co. A new 24-page catalog illustrates and describes the savings in water consumption, floor space, installation and maintenance costs, as well as improved sanitation, that can be achieved by means of modern washroom equipment. Full details are given on group washfountains and showers.

Athlete's Foot Prevention 265
Onox, Inc. How that skin-toughening can prevent athlete's foot is explained in this 4-page bulletin. It describes the mineral salt solution and sponge rubber mat to build up the skin's resistance to fungus attack.

PLANT MAINTENANCE

Anti-Slip Floor Waxes 266
E. I. du Pont de Nemours & Co., Inc. Illustrated with color diagrams and photographs taken with an electron microscope, this 14-page brochure tells how tiny particles of "Ludox," a colloidal silica, surround softer wax particles, giving skid resistance and greater hardness, without impairing the basic qualities of gloss, freeze-resistance, water-resistance, and leveling.

Rolled-Steel Safety Plate 267
Inland Steel Co. An unusually informative 12-page brochure shows you where to use non-slip flooring plates and why they aid maintenance and production. Emphasizing the safety plus features, the brochure also shows how to apply the plates and gives full specifications for various types.

Safety Floor Maintenance 268
Walter G. Legge Co., Inc. The safety, appearance and economy of the Legge system of floor maintenance are emphasized in this ready reference folder of the company's products. Of particular interest also are conductive floors and anti-static devices, a slip-resistant powder for sprinkling on wet floors, and a non-skid resurfacing mastic.

Special Maintenance Coatings 269
United Laboratories, Inc. A new 4-page bulletin describes a dozen special coatings for the solution of such plant maintenance problems as

(Continued next page)

SPECIAL OFFER BELOW VALID ONLY FOR THREE MONTHS AFTER PUBLICATION DATE.

READERS INQUIRY CARD

HOW TO GET FREE DATA! **(No Postage Required)**

ADVERTISED PRODUCTS: Just insert the page number of the advertisement in the boxes below. If page has more than one advertisement, also give the advertiser's name.

NEW PRODUCTS ("WHAT'S NEW" Pages): Insert the key numbers shown on each item.

FREE BULLETINS & CATALOGS: Insert the key numbers shown on this page.

September, 1952 **Please send me the following free data —No obligation.**

PLEASE PRINT

Name _____ Title _____

Company Name _____

Street Address _____

City _____ Zone _____ State _____

Free Bulletins (Continued)

skidproofing, rust prevention, painting over damp areas, weatherproofing and decoration of exterior masonry, interior waterproofing, painting over hot surfaces, acid protection, etc.

MISCELLANEOUS

Fire Extinguishers 270
Buffalo Fire Appliance Corp. As a quick guide to modern extinguishers and their uses, this condensed pocket-size catalog describes the Buffalo line of hand extinguishers and engines, tells the types of fires each is suitable for, and gives data on recharging and maintenance.

Sling Chains 271
American Chain & Cable Co., Inc. An extremely informative 8-page catalog describes and illustrates all types of sling chains. In addition to full specifications, the manual tells how to select the proper type, gives advantages and limitations of the various kinds of chains, offers pointers on the care and inspection of chains, and gives data on chain adjusters, hooks and magnet chains.

Highway Warning Signs 272
Eastern Metal of Elmira, Inc. "Safety on the Highway" is the title of this colorful 4-page brochure illustrating and describing several types of traffic signs. Of particular interest are the "A" stand signs designed to remain upright in winds or backwash of passing traffic.

Safety Hammer 273
Custanite Corp. The unique features of the Flex-Flo safety hammer are described and illustrated in this 2-page bulletin. Diagrams and data show how the special design of this copper-base alloy hammer prevents mushrooming, chipping, flaking, and sparking.

Wood Boring Bit 274
PTI, Inc. Many readers will recall the amazing circular saw blade introduced several months ago. This same company is now bringing out a revolutionary wood boring bit, described in an illustrated bulletin. The new bit eliminates torque and swing, is self-seating and permits drilling at any angle. The new design simplifies sharpening.

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